

Railway Age Gazette

DAILY EDITION

Copyright, 1912, by the Simmons-Boardman Publishing Co.

Vol. 52. NEW YORK—JUNE 13, 1912—ATLANTIC CITY. No. 23b.

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE, BY
SIMMONS-BOARDMAN PUBLISHING CO., 83 FULTON ST., NEW YORK.CHICAGO: 417 South Dearborn St. CLEVELAND: Citizens Bldg.
LONDON: Queen Anne's Chambers, Westminster.E. A. SIMMONS, *President.*L. B. SHERMAN, *Vice-President.*HENRY LEE, *Sec'y & Treas.*

The address of the company is the address of the officers.

EDITORS:

SAMUEL O. DUNN, *Editor.*BRADFORD BOARDMAN, *Man'g Editor.*

ROY V. WRIGHT

G. L. FOWLER

WILLIAM FORSYTH

W. E. HOOPER

R. E. THAYER

E. S. FAUST

E. A. AVERILL

REPRESENTATIVES:

FRANK S. DINSMORE

CECIL R. MILLS

A. E. HOOVEN

KENNETH G. CLOUD

W. D. HORTON

W. W. NEWCOMB

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....	\$5.00
Canada	6.00
Foreign Countries (excepting daily editions).....	8.00
Single Copies	15 cents each

Engineering and Maintenance of Way Edition and the four Maintenance of Way Convention Daily issues, North America, \$1.00; foreign, \$2.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

CONTENTS

EDITORIAL:

Editorial Notes	1297
Car Wheels	1298
Coupler Side Clearance	1299

ANNOUNCEMENTS 1299

PROCEEDINGS:

Revision of Constitution	1302
Revision of Standards and Recommended Practice.....	1304
Train Brake and Signal Equipment.....	1308
Test of Brake Shoes.....	1309
Car Wheels	1310

MISCELLANEOUS:

"Papa Will Not Dance To-Night".....	1317
Major Symington	1318
M. C. B. Registration.....	1319
Most Powerful Locomotive in the World.....	1321

CONVENTIONALITIES 1323

THE EXHIBIT 1324

ONE matter was touched upon by President Stewart yesterday morning that will have to receive attention, and the strange part of it is that the necessity for that attention has not been so forced to the front by the experience of the railways during the past year, as to call out action by the executive committee in advance of the convention. It is the influence of the safety appliance act on interchange. As the law stands there is a penalty attached to the running of cars stencilled with "United States Safety Appliances," unless they are properly equipped. And, further, it is required that all cars passing through the shops for general repairs, whether of home or foreign roads, must be equipped with safety appliances. As

President Stewart said, it is quite impossible to inspect all cars for standard safety appliances at interchange points, and therefore, a heavy provision should be incorporated in the rules of interchange for collecting any pieces, that may be imposed on the operating road, from the owner. Again, there should be a regular set of charges formulated for the application of the safety appliances. Both of these points should be comparatively easy of adjustment, and should and probably will receive the prompt attention that they deserve.

THE constitution of the Master Car Builders' Association which was adopted in June, 1909, has been found generally satisfactory, and the only important change suggested by the Committee on Revision relates to the ballot for officers. The nomination of three persons as candidates for president and six persons as candidates for vice-presidents was found to be cumbersome, and took too much time. The change recommended by the committee was regarded as almost too radical, and objection was made to a printed ballot which contained only one name each for president and vice-presidents. Mr. Vaughn's amendment, which was adopted, provides that the ballot may be something like that used by the American Society of Mechanical Engineers where a group of, say, 20 members may nominate a special ticket which shall be printed on the regular ballot. This overcome the objection to the writing of independent names on the regular ballot, as a scattering vote of this kind usually has no force. It was pointed out incidentally in the discussion that on the regular ticket for new members of the executive committee of the Master Car Builders' Association, nominated by the nominating committee, not one master car builder is included, all being motive power officers who had their practical training in locomotive shops. This is certainly a good argument for presenting an opportunity for an independent vote for the officers of the Master Car Builders' Association.

THE report on brake shoes was a report of "progress" without there being any progress to report. It contains certain recommendations for future investigation that the executive committee of the M. C. B. Association did not see fit to make an appropriation for during the past year. These consisted of tests at high pressures (12,000 to 18,000 lbs.), at speeds somewhat below the maximum at which work has been done. It is undoubtedly important that this work should be done; valuable information would be obtained by it. If the best braking work is to be done, it is necessary to be fully acquainted with the sliding scale of the coefficient of friction and know all of its vagaries in its relation to pressures and speeds which were first suggested by the Galton-Westinghouse experiments of a generation ago. We know far more than Col. Galton did, but when all is said and done there is one little point of frictional resistance that places the limit on the efficiency and the rate of retardation producible by any brake shoe in actual service. This is the area of contact between the wheel and the rail, and no brake shoe resistance should exceed the resistance at this point. It is in this that the work on the testing machine differs from that on the road. Excessive pressures of 18,000 or 20,000 lbs. may be used to advantage on the machine; the rate of retardation may be very rapid and the length of stop as measured by the number of rotations of the wheel may be very short, with a correspondingly brief interval of time. But this is far from proving that the same length of stop can be duplicated with a car or train upon the track. The coefficient of friction may be high for the high pressure and speed—too high, in fact, to be useable. And, so, while it is desirable that we should know what may be accomplished in the laboratory with these excessive pressures, it does not

seem probable, from what has already been done, that they will be available for work on the road.

in sympathy with the right way of doing things, but that it intends to insist upon its being followed.

WHILE there is general dissatisfaction and complaint as to the poor quality and short life of air-brake hose, there has been "little doing" by the Master Car Builders' Association in the making of a thorough investigation of modern methods of manufacturing rubber so that a proper specification can be prepared. The present specification has not been revised, except the label, since 1905, and it could be improved in several respects, not only as to the quality of rubber required, but as to the tests and inspection. A revision of this specification was suggested in the President's address, and it is so recommended in the report of the committee on Train Brake and Signal Equipment. The present specification puts a premium on softness, and it does not state the proper relation between the strength and stretch of the material which is necessary to secure the desired quality of rubber. The soft compound, even if made of fine Para rubber and sulphur, is not the best for air-brake hose, and a stronger material with a firmer texture is required. Rubber having the desired quality should possess a higher tensile strength and higher elongation than is required by the present specification. The manufacture and testing of rubber has developed considerably since 1905. The maximum tensile strength now required is 400 lbs. per square inch, and this should be increased to 800 or 1,000 lbs. for the inner tube, with a stretch to properly balance such strength. The strength and stretch test for the cover need not be quite as severe as that for the inner tube. As there is some variation in the thickness of rubber in different parts of the circumference, the average of at least 12 measurements by micrometer should be used in obtaining the area for stretch and tensile strength. In the stretch test the tube sample should be under a stress of 400 lbs. for ten minutes and the cover should be placed under a stress of at least 300 lbs. Samples should be tested at a uniform temperature of 70 deg. F., and the testing machine should work at a uniform speed of 20 in. per minute. A minimum strength of 800 lbs. per square inch, with an ultimate elongation at the breaking point of 9 in., could be easily obtained at a price no higher than that now paid for the soft and weak rubber which present specifications admit and which has shown a decided tendency to deteriorate very rapidly.

IF freight cars are to be kept in a proper condition to transport material without danger of damaging it, and at the same time are to be maintained at a minimum cost, it is not only necessary that they should be properly designed and built, but that repairs should be made promptly and systematically. While it is practically impossible to keep track of the exact condition of each individual car, it is possible to keep the average condition of the equipment at a high point by placing certain regulations in force and seeing that they are lived up to. For instance, one road which is notable because of the low cost of maintenance of freight cars does not have any special trouble with a type of car roof, which is giving one of its neighbors a great deal of trouble, simply because each car repair point on the system is ordered to renew a certain number of these roofs every month. Even if similar regulations concerning other parts of the car were not in force, the moral influence of this one, if properly enforced, would necessarily have a considerable effect on the proper upkeep of the rest of the cars. A small and comparatively unimportant defect soon grows to serious proportions if not promptly attended to, but the car repair forces over the system will not realize the importance of this unless the management takes active steps to show that it is not only

CAR WHEELS.

THERE are many points in the excellent report on Car Wheels that should receive the careful consideration, not only of the members of the Master Car Builders' Association and railway men generally, but of all those who are interested in the development of the steel wheel and the improvement of the cast iron one. Very early in the report, for example, there is the reason for refraining to offer a standard specification for solid steel wheels, because "the art of manufacturing solid steel wheels is yet in a process of development." In marked contrast to this conservative position, is the action of the Society for Testing Materials, which is shown in the two appendices, where the process of manufacture, as well as the product, is hedged in as though everything pertaining thereto had been so thoroughly completed that nothing more remained to be done in the way of experimentation, and the last word had been said, it being merely necessary now to protect the buyer from the unscrupulous manufacturer. This position of conservatism is, however, quite characteristic of the Master Car Builders' Association. It is holding off more and more from chemical analyses, and matters that may control methods of manufacture and simply asks for results, leaving manufacturers to attain those results, which are mechanical, in any way that may seem best. Surely, this is a sane and sensible method of proceeding.

Again, the committee touches gingerly on a point that has been under consideration for a number of years, but regarding which nothing has, as yet, been done. It is recognized that all metals, and especially all wheels, whether they be of cast iron or of solid steel, are subjected to internal stresses inherent in the method of manufacture, but of whose character or magnitude we know nothing. The matter was upon the point of being subjected to a critical investigation and analysis a number of years ago, but was stopped by commercial changes, and so has not been touched. It is practically certain, however, that something will be done during the coming year in the way of determining what these internal stresses are both in magnitude and direction, and it was this that the committee probably had in mind when it framed the paragraph to which allusion is made. Whether the committee will carry on any investigation itself is not hinted, but it is to be hoped that it will. That any method of inspection can be developed that will detect and measure these stresses without the destruction of the wheel is doubtful, but if it could be done, it would be of incalculable benefit to every user and maker of car wheels in the country.

A broader and more far-reaching problem is that of increasing the strength of the cast iron wheel flange by increasing its thickness, and here the committee acknowledges its helplessness. To add metal here involves frog and crossing clearances, over which the association has no jurisdiction and which can only be done with the co-operation of American Railway Engineering Association and the approval of the American Railway Association. It may involve such large expenditures for changes as to be impracticable, and the best to be expected in this direction for some time to come will be repeated reports of progress, when, in many cases, no progress has been made.

Another point on which nothing has been done, is in the design and specification of a wheel for a car of 140,000 lbs. capacity. In view of the criticisms that have been made of the cast iron wheel for cars of 100,000 lbs. capacity, it rather takes one's breath away to think of adding 40 per cent. to the nominal capacity and probably 30 per cent. to the actual wheel loads that have already caused so much anxiety.

Whether that anxiety is needless or not, need not be discussed here. Evidently the manufacturers will not fail to try to furnish a wheel suitable for high capacity cars, and it will be interesting to know what manner of wheel this will be that will carry a wheel-on-rail pressure of 25,000 lbs. or more.

The recommendations for the specifications governing solid steel wheels, are concise, to the point, and bear on the physical operating conditions of the wheel, without, in any way, dictating methods to the manufacturer.

The report is really a thorough and comprehensive statement of the last word to date on the car wheel question, and in its very conciseness and conservative attitude on the subject shows how fully the committee realizes the magnitude of the problem with which it has to deal and how conscientiously and painstakingly it has handled it.

COUPLER SIDE CLEARANCE.

THREE years ago tests were made and reported to the association by the coupler committee, which indicated that, so far as the train resistance or effect on the car structure was concerned, there was no advantage of a coupler side clearance greater than $2\frac{1}{2}$ in. at the drawbar carrier iron on all steel cars over 40 ft. in length. The recommendation of the committee that the standard of the association be changed to read "The total side clearance of the coupler to be $2\frac{1}{2}$ in." was carried on letter ballot by 1501 to 245 votes, and this now stands as the standard. This standard previous to 1909 read "Not less than $2\frac{1}{2}$ in." The committee wished this to be changed because of the liability of the couplers not mating if quarter side clearance was allowed.

In spite of these tests and the vote on the letter ballot there are now many cars being built with coupler side clearance of 4 in. This spacing is standard on at least one of the largest systems, which has probably as few sharp curves as any road in the eastern section of the country. Cars with this clearance have been in use in large numbers all over the country for several years, and no trouble appears to have been caused with the couplers not mating, although no special centering device is used. It seems that the draft gear holds the coupler head sufficiently near the center to overcome any serious trouble with coupling.

When this subject was being discussed on the floor of the convention in 1907-8 the feature of flange wear was the principal point advanced in favor of increased side clearance. The tests, however, showed that there was but little difference in the train resistance with the various clearances from 1 in. to 5 in. This would indicate but small difference in flange friction. The features of loose and broken yoke rivets, broken knuckles and knuckle pivot pins and broken guard arms were not considered in the test, although the side pressures obtained were not excessive and seemed to indicate little danger in this respect. They did show, as would be expected, that the larger clearances gave the smaller pressures. There is little doubt but what the trouble with loose and broken parts of couplers are, to some extent, caused by strains due to a lever action around the carrier iron. Even though this may not seem to be excessive, if it can be reduced without introducing other difficulties it would seem advisable to do so. What it can be is proved by the many cars now running with 4 in. clearance.

The only real difficulty to be expected would be with the couplers getting off center. While with some arrangements of yokes and draft gear this might occur, devices are available which will insure the coupler head remaining practically at the center when free.

In view of these conditions it would seem more sensible to return to the old wording of the standards, viz.: "The total side clearance of the coupler to be not less than $2\frac{1}{2}$ in."

Announcements.

TO-DAY'S PROGRAM.

M. C. B. ASSOCIATION.

Discussion of reports on:

'Safety Appliances	9.30 to 10.00
Rules of Interchange	10.00 to 10.30
Prices for Labor and Materials.....	
Rules for Loading Material.....	10.30 to 10.45
Damage to Freight Equipment by Unloading Machines	10.45 to 11.00
Overhead Inspection	11.00 to 11.15
Coupler and Draft Equipment	11.15 to 12.15
Car Trucks	12.15 to 12.30
Springs for Car Trucks.....	12.30 to 1.00
Consolidation	1.00 to 1.10
Train Lighting and Equipment.....	1.10 to 1.30

ENTERTAINMENTS.

Orchestra Concert, 10.30 A. M.—Entrance Hall, Million Dollar Pier.

Orchestra Concert, 3.30 P. M.—Entrance Hall, Million Dollar Pier.

Informal Dance, 9.30 P. M.—Entrance Hall, Million Dollar Pier.

SUPPLY ASSOCIATION ELECTION.

The Executive Committee of the Railway Supply Manufacturers' Association has named the hours between 10 A. M. and 12 M., Friday, June 14, 1912, for the election of four members of the executive committee for terms of three years to fill the places of members whose terms expire on September 1, 1912.

This election will be held in the office of the executive committee, up-town side of the Million Dollar Pier, next to the enrollment booth. Ballot boxes will be open between the above named hours to receive votes for members of the Executive Committee from the following districts:

First district, New England States and Canada.—One member in place of Albert C. Ashton, Ashton Valve Company, Boston, Mass.

Second district, New York and New Jersey.—One member in place of Charles P. Storrs, Storrs Mica Co., Owego, N. Y.

Fourth district, Ohio, Indiana and Michigan.—One member in place of H. I. Lord, Detroit Lubricator Co., Detroit, Mich.

Seventh District, States west of the Mississippi River, including Louisiana, but excepting Iowa and Minnesota.—One member in place of E. L. Adreon, American Brake Co., St. Louis, Mo.

Election will be by ballot. A separate ballot box will be provided for each of the above districts. Official blank ballots will be provided. Ballots may be cast at any time between 10 A. M. and 12 M.

One vote only may be cast by each member, corporation, co-partnership or individual belonging to the association, same to be cast only by the properly accredited delegate of such member.

Each voting delegate shall deposit his ballot in the ballot box marked for the district within which the home office of his company is located. Every voting delegate should see that the person for whom he votes for executive member is a resident of the district in which the vote is cast, and is a representative of a member of the association.

ENTERTAINMENT COMMITTEE MEETINGS.

The entertainment committee meets at 1000 o'clock each morning on the balcony over the enrollment booth. Every member of the committee is busy, but these meetings are an important factor in the work of the committee, and it is urged that members report for them promptly. They last only a half-hour or so.

M. C. B. DANCE TO-NIGHT.

The informal dance at the pier to-night will begin at 9.30.

The executive committee of the M. C. B. Association has selected the following dance committee to act with the sub-committee of the entertainment committee of the Railway Supply Manufacturers' Association: C. D. Young (Penna.

Proceedings.

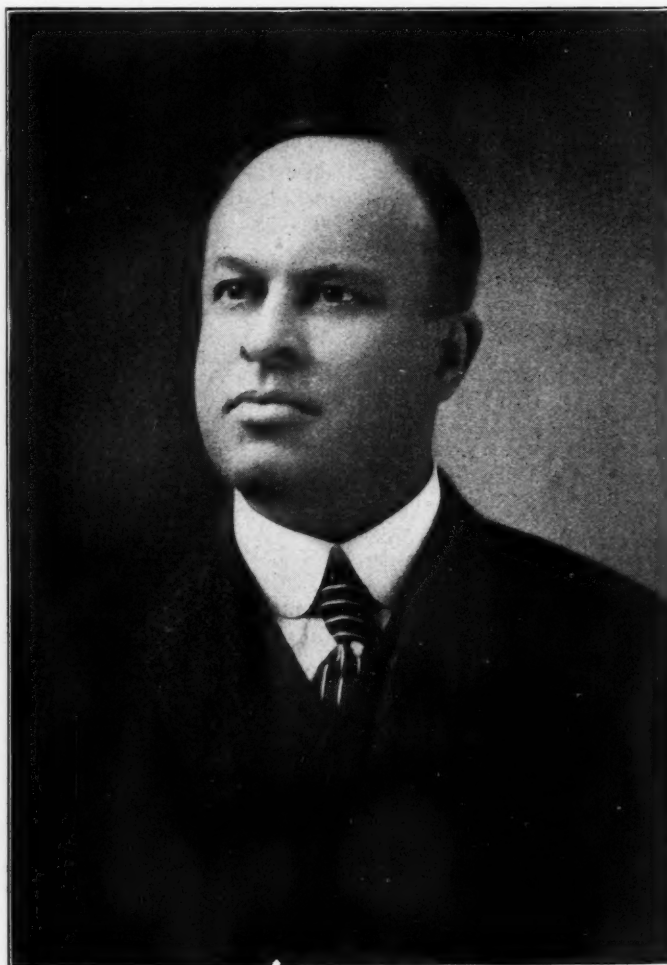
The first session of the forty-sixth annual meeting of the Master Car Builders' Association was held in the Greek Temple, on Young's Million Dollar Pier, Atlantic City, N. J., on Wednesday, June 12, 1912.

The president, A. Stewart (So. Ry.), called the meeting to order at 9.40 o'clock. The Rev. Dr. Newton W. Caldwell invoked the Divine blessing. Mayor Bacharach, of Atlantic City, welcomed the Association to the city. J. J. Hennessey (C. M. & St. P.), replied to the address of Mayor Bacharach.

ADDRESS OF PRESIDENT STEWART.

We are assembled this morning to conduct the business assigned for consideration at this, our forty-sixth annual convention of the Masters Car Builders' Association, and it gives me great pleasure to welcome you.

The meetings of the Association, which have now been held



A. STEWART,
President, M. C. B. Association.

R. R.), R. L. Kleine (Penna. R. R.), T. H. Goodnow (Armour Car Lines), E. J. Searles (B. & O.), H. L. Trimyer (S. A. L.), Alexander Kearney (N. & W.). These committeemen will please report to Chairman Mitchell of the entertainment committee. The members of the latter committee who act as a sub-committee for the dance to-night are Messrs. Younglove (chairman), Hayes, Hibbard, Dunkelberg, Wardell, Sherman, Nellis, Illingworth and Krepps.

ATTENTION, BALL PLAYERS!

All candidates for the western team please meet at the Enrollment Committee's booth at 10.30 o'clock this (Thursday) morning.

for forty-six consecutive years, have contributed more than the work of any other organization toward making it possible for the vast railway interests in this country to carry on their interchange of business. We are meeting again this year, with the approval of our respective companies, to further perfect our rules, and, if possible, to revise them in a manner that will still further reduce our cost of maintenance and clarify matters that have not been understood alike by all of our members; also to devise the best possible manner of complying with new legislation affecting the construction, maintenance and handling of equipment in interchange.

Much earnest work has been done by the committees on the various subjects up for consideration by this convention, but on account of the range of subjects listed for consideration, upon which reports are to be presented and discussed, it is deemed neither practicable nor desirable in this address to discuss in detail or to analyze the general work of the committees as represented by their reports.

On account of the personnel of the various committees and the earnest efforts that have been expended in the preparation of their reports, the amount of work that has been accomplished is not only creditable, but the Association is to be congratulated upon the excellence and quality of the work as reflected by these reports.

A very important matter that has not been assigned to any committee, and of such vital importance that action should be taken, relates to the interchange of equipment as effected by the recent Safety Appliance Acts. We have nearly a year's experience working under the new order of things and questions have been raised that can only be answered with the approval of this Association and I urge the necessity for action. We are required to change the safety appliances to standard on both system and foreign cars going through the shops for general repairs, and we should have a rule for charging the car owner with a portion of this expense. It is my understand-

matters affecting interchange in which they are interested, in the hope that we may be able to promulgate rules so clear that they will be understood and accepted by all without the necessity of such frequent recourse to the Arbitration Committee.

It should be our earnest endeavor to promote to the fullest extent the harmonious relations that have hitherto existed between the Interstate Commerce Commission and its representatives and this Association, and in this connection I want to call your attention to the fact that the last convention took notice of the work of the Conference Committee, composed of members of this Association, that had to do with adjustment of the relation of the railways to the government with regard to safety appliances. That committee has been continued as a sub-committee of the Special Committee on the Relations of Railway Operation to Legislation, and during the last year represented the railways in a conference with the post office department on the standardization of postal car construction and



D. F. CRAWFORD,
First Vice-President, M. C. B. Association.



C. E. FULLER,
Second Vice-President, M. C. B. Association.

ing that we are now subject to a penalty for handling cars marked "U. S. Safety Appliances," if the cars so marked are not in accordance with the law. To inspect all cars received with safety appliance defects, including location, is obviously out of the question and we should have a rule that will relieve the receiving line for penalty defects and material, location or manner of application, when cars have been stencilled as complying with the law.

Cars that have been fitted with the special 12 in. coupler to give the required end clearance should be so stencilled for protection to the owners and for the information of the inspectors.

We should consider a rule for a fair basis of interchange where it affects the removal or turning of steel wheels under freight equipment, and a proper charge for wooden cars which have been reinforced by continuous metal draft sills.

The question of changing the present M. C. B. specifications for air brake hose has been brought to my attention, and a committee should be appointed to take up this matter and report what changes are necessary.

All of the members are earnestly requested to bring up the

equipment. This work has not been entirely completed, although specifications have been agreed upon, approved and issued by the post office department, covering construction of steel and steel underframe full postal cars and the equipment for all classes of mail cars. The work of this committee has illustrated the value of co-operation as between the railways and the different branches of the federal government in formation of regulating legislation, and I want to say that a great credit is due to the committee and especially to the chairman of that committee for the very able manner in which the subject has been cared for.

The hours to be devoted to our daily sessions are so arranged that time may be conveniently devoted to the sights and delights of this great seaside resort, but we should not be unmindful of the fact that we are here principally to attend to business, and, therefore, I respectfully urge that each attendant, aside from his prompt and regular attendance on the daily session, should take full advantage of the special opportunity to inspect and study the latest improvements in equipment and appliances as exemplified in the exhibit of the Railway Supply Manufacturers' Association. Never have the supply compa-

nies appeared before us with such an extensive exhibit, this year's exhibit even surpassing the high standard of excellence of former years.

At the close of the forty-six years' existence of our Association, it is gratifying to note not only the general progress that has been made by reason of the solution of the problems that have been presented, but also the general influence for good accomplished by the Association in the practical railway world.

To the members of the railroad press represented here I desire, in behalf of the Association, to express our appreciation of their enterprise and assistance in the past as well as at this meeting.

As the close of my service as President of this Association is near at hand, I desire to thank you for the honor you have conferred upon me in electing me to the position that I am so soon to relinquish, and I desire to further acknowledge my appreciation for the hearty cooperation I have received on all

dues of members was \$12,307, and from sales of rules of interchange, proceedings, etc., \$5,496.82, making a total of \$17,803.82. The total expenses were \$17,793.82. The amount of unpaid dues amounts to \$988. The balance in treasury June 12, 1912, was \$627.91.

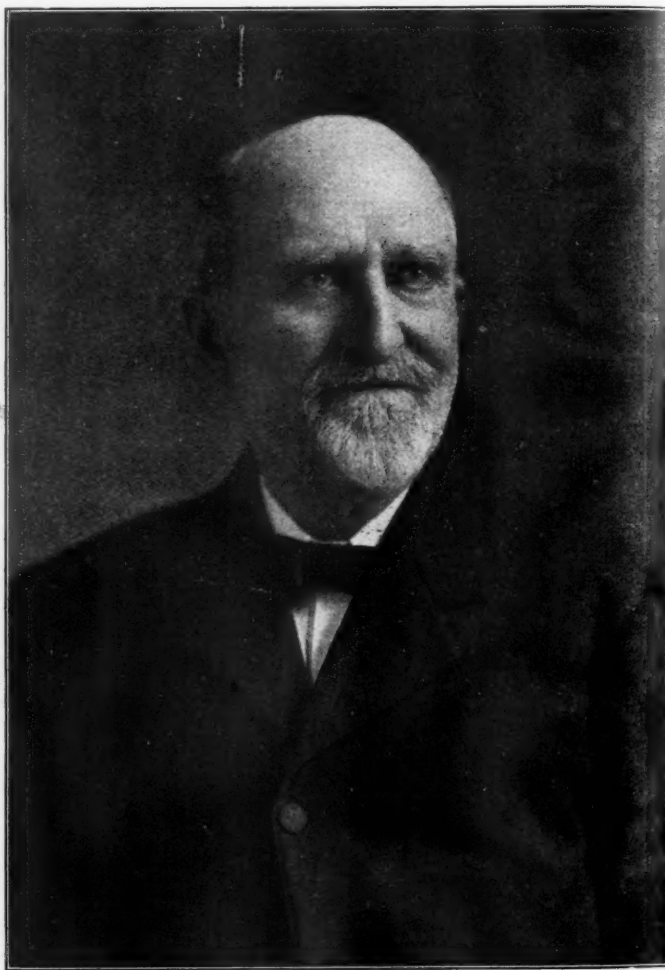
The report of the secretary and treasurer was referred to an auditing committee, made up of E. W. Pratt (C. & N.), T. H. Goodnow (L. S. & M. S.), and F. F. Gaines (C. of G.). The dues for the current year were fixed at \$4 as heretofore.

REVISION OF CONSTITUTION.

Previous to the adoption of the present Constitution, June, 1909, a nominating committee presented a verbal report to the convention at the first day's session, and the election



MORGAN K. BARNUM,
Third Vice-President, M. C. B. Association.



J. S. LENTZ,
Treasurer, M. C. B. Association.

sides in my efforts to satisfactorily administer the affairs of the Association.

ASSOCIATION BUSINESS.

Secretary Taylor then presented his report which showed that the active membership in June, 1911, was 422. Since that time there has been transferred to representative membership, 7; dropped out of railway service, 7; resigned, 6; deaths, 3; transferred to life membership, 2; transferred from representative membership, 4; new members, 42; making a total of representative membership, 397; associate membership, 14; life members, 20, and a grand total membership of 874.

The secretary stated that during the year, 38 railways and private car lines had signified their desire to become subscribers to the rules of interchange, governing freight cars; and 7 railways had advised of their acceptance of the code of rules governing the interchange of passenger equipment. The report of the cars represented in the Association compared with last year is as follows: June, 1912, 2,959,397; June, 1911, 2,464,530, which is an increase of 494,867 cars.

The report of the treasurer showed that the receipts from

called at the third day's session was by *viva voce*. It was felt by some of the members that this method did not offer the best opportunity for the membership to express their preference as to officers of the Association, and, therefore, when the Constitution was changed provision was made for the so-called secret ballot. It has developed in the election since the adoption of the Constitution that this method is not entirely satisfactory, requiring considerable time.

The committee has given consideration to the methods employed by the various technical associations for nominating and electing officers, and submit herewith the changes in the Constitution which it would suggest, as well as sample forms of ballots to be used.

In the proposed method each member has an opportunity to vote for the membership of the nominating committee and at the same time has opportunity to vote for any other member than those named by the nominating committee if he may desire to do so.

The committee would suggest, in order that this method, if approved, may be used at the Convention of 1913, that the subject be referred to letter ballot in January, 1913. It is

impossible, under the present Constitution, to change the method before the date mentioned.

The changes in the Constitution, submitted by the committee, are as follows:

Article 7, Committee on Nominations, section 1 to be changed to read as follows:

"SECTION 1. It shall be the duty of the Committee on Nominations to offer to the convention the name of one member as a candidate for each of the following offices: President, First Vice-President, Second Vice-President, Third Vice-President and Treasurer, and the names of three members as candidates for Executive members. Each person so named shall be either an active or representative member of the Association."

Article 9 to be added to by a second section as follows:

"SECTION 2. Printed ballots for use in the election of officers, Executive members, the Committee on Nominations, and for Associate and Life Membership, to be of the form appended hereto."

The ballot for president, for first vice-president, for second

those of the candidates proposed by the executive committee."

In the case of the ballot for life and associate membership, the instructions are to leave all names unmarked that are to be voted for and draw a line through the name of the one to be voted against.

The report is signed by D. F. Crawford (Penna.), chairman; C. A. Seley (C. R. I. & P.), and A. Kearney (N. & W.).

C. A. Seley (C. R. I. & P.), presented the report of the committee and added the following, which was suggested in the meeting of the executive committee last evening, and seemed to meet with approval. "Instead of having all members of the Association participate in voting on a letter ballot, that only representative members shall vote on matters submitted on letter ballot for adoption as standard, and on other subjects connected with the matter of standards."

The committee would, therefore, submit a further change of Section 1, Article II. The second sentence reads as follows: "Such proposition shall then be submitted to the Association for discussion, after which a vote shall be taken to decide whether



J. W. TAYLOR,
Secretary, M. C. B. Association.

vice-president, for third vice-president, for treasurer and the one for executive members, contain just the number of names to be voted for, with one blank space. The following instructions accompany this ballot:

"To vote in favor of all the names on this ballot leave it as it is unmarked. To vote against a nominee draw a line through his name. If you wish to vote for another eligible person write his name under the one marked out. The names printed are those of the candidates proposed by the nominating committee."

The ballot for the Committee on Nominations is composed of ten names with instructions to vote for five. A blank space is also left for any additional name. The following instructions accompany this ballot:

"To vote against a nominee draw a line through his name. If you wish to vote for another eligible person write his name under the one marked out. The names printed are

the proposition shall be submitted for decision by letter ballot to all members entitled to vote."

"The proposed change is to make it read: 'Such proposition shall then be submitted to the Association for discussion, after which a vote shall be taken to decide whether the proposition shall be submitted for decision by letter ballot to all the representative members.'"

DISCUSSION.

H. H. Vaughan (C. P.): I do not know that it is a matter of very great importance, as long as this association is entirely willing to trust the election of officers to its nomination committee, but I do think if we are going to have printed ballots, some method should be introduced for admitting the name of any other proposed officers to these printed ballots. Some section of the membership may wish to propose candidates other than those recommended by the committee on nominations. The effect of the proposed amendment as it now reads is to

make it a rather closed proposition, and I think that provision should be made for the addition on the printed ballot of the names of any other members that the executive committee, on the request of a certain number of members, see fit to have added to the ballot, so that candidates other than those proposed by the committee on nominations could be introduced and there would be a proper opportunity for having the names of such candidates considered in the election. Where a written ballot is in vogue, it is not so important, but where you put out a printed ballot, should not there be some method of having the names printed in as an alternative ticket, if an alternative ticket is desired to be put up by a certain number of the members?

F. F. Gaines (C. of Ga.): While I believe we all understand from Mr. Seley's remarks, concerning the recommendation of the committee on revision of constitution in regard to representative members voting, I want to make it clear that it is intended that the members shall have the privilege of voting according to the number of cars in the matter of standards.

Mr. Seley: I think it would be very difficult for the nominating committee to handle the matter exactly as Mr. Vaughan stated, unless there was considerable latitude. Here is a proposed form. Here is a name that is printed on the form, which is the name reported by the committee on nominations. Here is a blank under that name, and the instruction, "if you wish to vote for any eligible person, write his name under the one marked out." Now, if the committee on nominations should, under the advice of a certain number of members, present more than one name, it would be a departure from the method intended. Just how that would be handled I do not know. I am not sufficiently familiar with the subject, but it would seem, as far as the requirements of our election of officers are concerned that this simple method here ought to provide sufficient needs to meet all conditions. I think the politics of the case could be amply covered.

F. W. Brazier (N. Y. C. & H. R.): Last year I called the attention of the meeting to the large amount of red tape that was involved in the election of our officers. This is not a political organization, and I want to say, as one of the past presidents, I feel perfectly satisfied with the old way of electing the officers of this association when I look at the list of past presidents of the association, and, in my opinion, this matter of going into red tape in the election of our officers is uncalled for and unnecessary.

Now, with the greatest respect to the committee on nominations, I wish to point out one feature regarding the members who are proposed for election on the executive committee. There is not one car man on the committee. The car men are not all dead, and they are not going to die, and I think we should have some blank spaces so that if we want to put in a few of the car builders, we can do so, and have the car department represented on the executive committee of the Master Car Builders' Association.

Mr. Vaughan: What I desire is to have the practice along the same lines as that pursued by the American Society of Mechanical Engineers. They have an arrangement by which the nominees of the committee on nominations are printed as such, but if any section of the membership desires to put up any other candidates for office, they have the privilege of doing so, and the name of such candidates are entered on the regular ballot which contains the names of the candidates proposed by the committee on nominations. This nomination of a candidate other than those nominated by the committee on nominations has to be signed by a certain number of members. As a matter of fact, under this arrangement I do not think there is any particular danger, but if you had a nominating committee which desired to do so, they could arrange matters so that it would be very difficult to get any other name on the ticket than the names of the particular candidates reported by the committee on nominations. I do not think we are in any danger from that practice, but I do not think it is wise to adopt a plan for the nomination of officers that does not make it possible for the members to propose candidates other than those presented by the committee on nominations on the same ballot with those candidates.

As to writing in the names of additional nominees, what does that amount to? It means you will have to organize a movement among the members to put on the names you want to add, and to get everybody to write in the same names. There is no reason why alternate candidates desired by some section of the membership should not be presented to the association on the regular ballot for selection by the members.

C. A. Schroyer (C. & N. W.): Would not it cover your point, Mr. Vaughan, if in this proposed change to Article 7, it should read that the committee on nominations shall offer to the convention the names of one or more persons to each office?

Mr. Vaughan: No, sir, I think it would be very much better if they did not. I agree with the improvement which has been

made in respect to our nominations for officers in eliminating the placing of the nomination of 2 or 3 names of each office, and I feel that it is a great improvement and much simplifies matters to have only one candidate presented for each office, as the regular ticket presented by the committee on nominations; but I do think there should be a provision, whereby if we are to use printed ballots, any desired additions might be made to the nominees presented by the committee on nominations, such additional names as may be endorsed by a certain number of the members of the association to be printed on the ballots along with the regular nominees, and I believe that provision should be made to cover that point.

Mr. Schroyer: That would be done through the committee on nominations.

Mr. Vaughan: The executive committee or whoever gets out the ballots. Perhaps that would fall within the duty of the secretary, but the idea is where a certain number of members, say 20 representative members ask to have an alternate name placed on the list of nominees, that the name of such alternate candidate shall be printed on the ballot as well as the others. I will make it as an amendment.

The Secretary: What is the number of men who should propose another set of officers, in order to have the additional set of officers printed on the ballot, to have their names entered on the ballot?

Mr. Vaughan: I should say where 20 members desire to propose a name of any member for any office in place of one or more of the names suggested by the nominating committee, that the secretary shall place that member's name on the printed ballot, making a statement in connection with such name that it has been proposed by a certain number of members. I make that as an amendment.

M. K. Barnum (I. C.): I second the amendment.

Mr. Seley: As a member of the committee of revision of the constitution, I will accept that as an amendment to Section 1, Article 7.

A. Kearney (N. & W.): As a member of the committee of revision of the constitution, that is acceptable to me.

The President: A majority of the committee accept the amendment. The question is now on the report of the committee as amended.

Mr. Seley: I also ask to have that motion include the revision of the committee to Sec. 1, Article 11, as regards letter ballot.

Mr. Schroyer: I make that as a motion, that that also be included. (The motion was carried.)

The report of the committee was then adopted.

REVISION OF STANDARDS AND RECOMMENDED PRACTICE.

After due consideration of present standards and recommended practice of the Association, together with replies from members to the circular of inquiry, and requests involving standards presented by the Secretary, the committee reports as follows:

STANDARDS.

Journal Boxes and Details.

Page 523, Sheets M. C. B. 7 and 9.

2. A member suggests that the wedge for the 5 in. by 9 in. journal box be changed in design to provide for increased end-bearing surface against stop lugs.

The committee approves this recommendation.

Journal Boxes for Passenger Cars.

Page 525, 5 in. by 9 in. Sheet M. C. B. 8-A; 4 1/4 in. by 8 in. Sheet M. C. B. 13.

3. The committee received the following communication from McCord & Company:

"On looking over the recent designs of passenger pedestal journal boxes I was very much impressed with the lack of consistency in the areas of the equalizer seats.

"A 3 3/4 in. by 7 in. journal has an area of 26 1/4 sq. in., the equalizer seat is 3 5/8 in. by 6 1/2 in., giving it an area of 23 1/2 sq. in. "The area of the 4 1/4 in. by 8 in. journal is 34 sq. in. The equalizer seat is 3 1/2 in. by 6 1/4 in., giving 21 7/8 sq. in. of bearing surface.

"The area of the 5 1/2 in. by 10 in. journal is 56 sq. in., and the equalizer seat as designed at present is 3 1/2 in. by 6 in., giving it also 21 sq. in. of equalizer bearing surface.

"The 3 3/4 in. by 7 in. box is not illustrated in the proceedings, so I do not know where these dimensions have been obtained, but the 4 1/4 in. by 8 in. and the 5 in. by 9 in. are M. C. B. Standard.

"The 5 1/2 in. by 10 in. has not been passed upon by the Association, but the railways seem to be inclining toward 3 1/2 in. by

6 in. for the equalizer seat. It seems to be only reasonable that the equalizer seat area should be in direct proportion to the journal area.

"In following up the service given by these boxes it is evident that the equalizer seat area on the 5 in. by 9 in. box is not sufficient. The boxes seem to wear out in the equalizer seat before they do in the pedestal channels, and the object should be to have them both wear out at the same time."

The committee refers this to the committee on car trucks.

Passenger Car Journal Box and Contained Parts.

Page 525, Sheet M. C. B. 8-A.

4. A member calls attention to the mouth of the 5 in. by 9 in. passenger journal box not conforming with that of the 5 in. by 9 in. freight box.

The committee instructs the Secretary to make the necessary correction.

5½ in. by 10 in. Journal Box and Details.

Page 524, Sheets M. C. B. 10 and 12.

5. A member suggests that the wedge for the 5½ in. by 10 in. be changed in design to provide for increased end bearing surface against stop lugs.

The committee approves this recommendation.

Dust Guards.

Page 533, M. C. B. Sheet 15.

8. The committee received the following communication from McCord & Company:

"I beg to call your attention to some inconsistencies in freight



T. H. GOODNOW,
Chairman, Committee on Revision of
Standards and Recommended
Practice.

and passenger journal-box designs, so far as the M. C. B. standard dust guards and the dust-guard slots and the holes in the dust-guard walls of the M. C. B. boxes are concerned." A drawing was enclosed showing the clearances of the dust-guard seat on the axle and the box and the dust guard on the box in various positions. The committee referred this to the committee on car trucks.

Distance Between the Backs of the Flanges of Car Wheels.

Page 535, Sheet M. C. B. 16.

10. A member suggests adding paragraph as follows:

"In 1909 the minimum distance permissible between the backs of flanges at base line of tread was fixed at 4 ft. 5 3-32 in." Omitting the words "Modified 1909" from the third paragraph.

The committee concurs in this recommendation.

Brake Head and Shoe.

Page 541, Sheet M. C. B. 17.

13. A member calls attention that the location of the lugs from the vertical dimension line are not correct when the head is developed from the radial center line as located, as indicated by sketch accompanying.

The committee concurs in this correction.

Air-Brakes—General Arrangement and Details.

Pages 545 and 546, Sheet M. C. B. 18.

14. A member suggests that inasmuch as the capacity of the brakes must equal 70 per cent. of the light weight of car, this does not state at what cylinder pressure the percentage is based on, calling attention to the latest recommendation of the air-brake companies that this is to be on a cylinder pressure of 50 lbs. per sq. in.

The committee does not concur in this recommendation.

Automatic Coupler.

Pages 622 to 625, Sheet M. C. B. 23.

17. A member renews a suggestion that was presented during the 1910 Convention, in which was recommended to the committee on standards and recommended practice, the addition of an 8½ in. coupler butt, for the reason that the 6½ in. coupler butt was designed to be used with the 6¼ in. by 8 in. draft springs, allowing ¼ in. clearance.

Again the 9½ in. butt was designed to accommodate certain friction draft gears, requiring that width within the yoke. This recommendation was submitted to letter ballot and rejected, the vote being 1,191 yes and 614 no, the necessary votes for adoption being 1,203, or within 12 votes of carrying the recommendation.

Inasmuch as there are thousands of cars equipped with the M. C. B. class G springs, the 6½ in. butt is not sufficient in depth, and not being good practice to use liners between the butt and yoke ends (the diameter of class G springs being 8 in.), and, furthermore, this spring can not be used with the 9½ in. butt as the clearance is too great, also the spring would not be central. Therefore, this member believes the matter should again be submitted to the M. C. B. committee with a view of urging the adoption of the 8½ in. butt as standard.

The committee does not approve of this recommendation, inasmuch as it was voted upon and lost by letter ballot in 1910, the main objection being that it increases the number of standards that must be carried in stock for repairs.

Automatic Coupler.

Page 627, Sheet M. C. B. 23.

18. A member suggests to amend the specifications for M. C. B. couplers so as to admit as an M. C. B. standard couplers having the underneath uncoupling arrangement, calling attention to paragraph 4 on page 627.

The committee refers this to the coupler committee.

Pages 622 to 624, Sheet M. C. B. 23.

19. A member suggests that reference be made in the text to the authority for the temporary coupler having 12¼ in. head.

The committee concurs and advises that this will be taken care of in the 1912 Proceedings, on authority of result of the special letter ballot.

Signal Lamp Socket.

Page 639, Sheet M. C. B. 26.

20. Through the secretary the following communication from the American Railway Association was received:

"With the introduction of steel cars for passenger train service, it is found that the method of mounting the brackets for carrying the markers of trains is becoming mechanically so uncertain and irregular as to seriously interfere with the proper display of markers as protective signals.

"There is apparently no system governing the mounting of these signals, some being placed upon the corners of the roof, some high up and others about midway of the corner posts of the cars; while the castings used for the sockets on the cars and the brackets of the lamps are frequently rough, and so crudely fitted that the lamps can not be accurately sighted.

"There is found to be a variation in the angle of the axis of the bracket with the center line of the car. The western roads use an angle of 45 deg., while the Pennsylvania Railroad and many others of the eastern lines use an angle of 14 deg. 10 min.

"The lamp manufacturers, in their endeavor to make lamps suitable for the different styles of brackets on the cars, notch out the lamp holder so that it may be set accurately to an angle of 45 deg. They then with the notches subdivide the arc into three sections of 15 deg. each, which arrangement does not fit the Pennsylvania angle of 14 deg. 10 min. by a variation of 50 min. With the increasing high power of marker lamps it becomes more important than ever to have them set accurately in position to effectively perform their primary function of rear protection, and the sighting of a marker attached to the rear of a train is just as important as the proper sighting of a block signal or a train-order signal.

"In the matter of the safe operation of trains at night the efficient use of the train markers is of such vital importance that it should receive most careful attention, and I would suggest that the committee on transportation take up this subject,

and arrange for standard specifications for the attachment of the markers to all classes of cars in both passenger and freight train service."

The committee recommends locating socket at a 45 deg. angle, located on the corner post, and approximately 9 ft. 6 in. from the rail to the bottom of the slot of socket.

Siding, Flooring, Roofing and Lining.

Page 639, Sheet M. C. B. 26.

23. A member calls attention to the fact that with the present standard for tongue and groove in siding, roofing, lining and flooring it is impossible to drive up and make a tight joint on the face side, and suggests that it be cut back 1-32 in. on the under shoulder tongue edge.

The committee concurs in this recommendation.

Splicing of Steel Center Sills.

Page 643, Sheet M. C. B. 28.

28. A member calls attention to the second paragraph and the following paragraph, which refer to Fig. A and B for method of splicing center sills, in that the cuts on Sheet M. C. B. 28, showing the splicing of steel center sills, give the length of the reinforced plates as 14½ in. The length of the protruding end, while not given, is presumed to be 8 in. The text specifies two joints to be reinforced by plates on both sides to be not less than twice the length of the protruding end; therefore, the reinforced plate, shown on this cut, should be at least 16 in. instead of 14½ in.

The committee concurs with the suggestion, but recommends changing the text, paragraph two, to show 7 inch projection, instead of 8 in., so as to conform to the figures in cuts A and B.

Pamphlets, Catalogues, Specifications, Etc.

Page 649

29. A member writes as follows:

"I recently had the matter of standard size for specification and letter-head paper to consider in connection with some Government boiler reports, and comparing these with the Master Car Builders' standards as adopted, I notice there are a great variety of sizes used.

"The M. C. B. size for specifications and letter-heads is 8¼ in. by 10¾ in. I find we ourselves use Form 82, size 8¾ in. by 11 in. This is padded. The Government uses a demy letter-head, 8 in. by 10½ in. Printer's letter-head size is 8½ in. by 11 in. As the M. C. B. specification does not seem to agree with anything that I have to do with, I am writing for information and ask why it should differ from that used by the Government."

The committee recommends the adoption of the Government's standard, 8 in. by 10½ in.

RECOMMENDED PRACTICE.

Box Car Side Door and End Door Fixtures.

Page 726, Sheet M. C. B.—F.

33. A member calls attention to the door-hasp staple plate as shown in details 16 in. long, while on door as 5¾ in., the 17-in. length being rejected by letter ballot in 1911.

The committee agrees that it was an error in showing this as 16 in., in view of its rejection, but at the same time renews its recommendation to the Association for the 16-in. style, with four bolts.

Box Car Doors.

Sheets M. C. B.—F and F—1.

34. A member suggests advancing Sheet M. C. B.—F, showing box car outside hung door, and Sheet M. C. B.—F-1, showing box car flush side door, to standard.

The committee concurs in this recommendation.

Marking of Freight Cars.

Page 641, Sheet M. C. B.—G.

35. A member suggests that this sheet be changed to show three stars following the stenciling of weight of car. This to correctly indicate the final light weight of car.

The committee would recommend that paragraph B, of M. C. B. Rule 30, as follows:

"Wooden and steel underframe cars one year old should be reweighed and restenciled, the weight to be followed by one star; cars two years old should be again weighed and stenciled, the weight to be followed by two stars; cars three or more years old should be again weighed and stenciled, the weight to be followed by three stars, which will indicate final weight." be incorporated in the text as a Recommended Practice, and the star indication added to Sheet M. C. B.—G.

36. A member calls attention to the minimum height of 1 ft. 10½ in. from center line of coupler to bottom of number, being

insufficient to properly locate lettering on steel underframe gondola cars, and suggests that this be made 1 ft. 5 in.

The committee concurs in this recommendation.

Cast-iron Wheels.

Page 538, Sheets M. C. B.—N, O and P.

38. A member calls attention that the seventh paragraph should be changed so as to include the modified form of wheel gage, Proceedings 1909 and 1911.

The committee agrees that the wording should be changed, omitting the date reference and to read as follows:

"The thickness of the flange shall be regulated by the maximum and minimum flange thickness gages adopted by the M. C. B. Association."

Lumber Specifications.

Pages 742 to 787.

40. A member calls attention to the lumber specifications, raising question as regards their intent with special reference to allowable defects, taking into consideration the length of piece. For instance, in purchasing siding lengths of from 5 ft. to 18 ft., with the specifications as they stand, would the same number of defects be allowed in a 5-ft. piece as in an 18-ft?

This was referred to a member of the committee having in hand the lumber specifications, with advice to the effect that it was the intention of the committee that the allowable defects laid down in the specifications were for standard lengths of lumber, and the committee concurs in this opinion.

Classification of Cars.

Page 733.

41. A member suggests designations for certain kinds of refrigerator and ventilator cars, which have been described by the Railroad Refrigerator Service Association, as follows:

SYMBOL.	KIND OF CAR.	DESCRIPTION.
RS	Standard Refrigerator.	Equipped with insulation, ice tanks and ventilating devices.
RA	Meat and Provision Refrigerator.	Equipped with insulation and brine ice tanks without ventilating devices.
RB	Beer and Ice Refrigerator.	Body and doors equipped with insulation, having no ice tanks or ventilating devices.
VS	Standard Ventilator.	Equipped with insulation, including insulated side, end and top openings, and ventilating devices without ice tanks.
VA	Vegetable Ventilator.	Equipped with insulation, but having common box car end and side doors which afford no protection against heat or cold.

This is also suggested by the Association of Transportation and Car Accounting Officers.

The committee concurs in this recommendation.

NEW SUBJECTS.

43. In accordance with action of this Association, 1911 convention, with respect to the establishment of a maximum standard or limiting height for the running-board of a standard dimension box car—

The committee, after careful consideration of this, believes that this is governed by the height of the brake staff as referred to on page 564 of the 1911 Proceedings, which fixes this at 14 ft. and with this in mind and the clearances for the brake wheel as established by the United States Safety Appliance Standards, determines the maximum height of running-board for the various construction of roof, and, therefore, does not concur in the suggestion.

44. The arbitration committee suggested that a committee be appointed to show the location and design for repair and defect card boards on steel cars, and which was referred to this committee by the executive committee, and included in our circular of inquiry, M. C. B. 14, under date of December 11, 1911.

The committee received only two responses, and with the information at hand there was not sufficient data as to the various styles of steel cars to enable a report at this time, and the matter is, therefore, referred to the Association for further instructions.

The report is signed by:—T. H. Goodnow (Armour Lines), chairman; C. E. Fuller (U. P.); W. H. V. Rosing (St. L. & S. F.); W. E. Dunham (C. & N. W.); S. M. Hindman (Penna.); O. C. Cromwell (B. & O.) and T. M. Ramsdell (C. & O.).

DISCUSSION.

F. F. Gaines (C. of Ga.): Mr. President, with all due respect of the committee on standards, referring to paragraph 17, I think there is an excellent argument for re-submission, owing to the reason that the committee assigns for turning this down, the fact that we have already too many standards. As a matter of fact, the 8½ in. coupler butt has been used all over the country, and I would like to move the adoption of an

amendment that we resubmit this question again. I think it is high time that was made one of our standards. (The motion was seconded.)

Mr. Schroyer: Mr. President, I am opposed to that motion for the reason that it will require us to carry in stock a certain \$1.50 bar to replace a \$1.25 spring.

R. L. Kleine (Penna.): Mr. President, We are using the 8-in. spring and using them successfully. I hope the motion will not prevail for the reason that if we have the 8½-in. butt, it means the Pennsylvania would have to carry in stock in couplers four times what we have now. That not only applies to the 7-in. shank but also will apply to the 5-in. by 5-in. shank.

Mr. Schroyer: Mr. President, I am opposed to that motion for the reason that when we have standard butts of 6½ in. or 9¼ in., there is no reason why anybody should go to the 8½ in. butts, because they can follow either one or the other.

H. LaRue (C. R. I. & P.): In the committee's report they refer to the fact of having either to make a new yoke or make some repairs.

Mr. Kleine: I might say you could use an 8-in. butt with an 8-in. spring and hardly tell the difference.

J. J. Hennessey (C. M. & St. P.): I feel if you use an 8½-in. butt where a 9¼-in. spring is used, it is necessary to change the yoke. You can't get your rivets in; if you spread, you put it out of line. While I am not strongly in favor of adopting another standard, I believe it is well to be considered in this convention. (The motion was put and lost.)

Mr. Hennessey: On page 2, they show a 5 in. by 9 in. journal box and details. I would like to ask the committee if they meant to put a gib on the top and take out the rocking part of the wedge?

Mr. Goodnow: Simply to increase it.

Mr. Hennessey: But you destroy the rocking motion?

Mr. Goodnow: No; it is 1/32 in. below. And that was not so much for the rocking motion as it was to allow, in removing the wedge, that much clearance in taking it out of the box.

Mr. Schroyer: I look at this in this way, that the rocking motion of the wedge is entirely destroyed by the use of that lug unless there is a recess in the top of the box. Suppose you do that, you increase the difficulty in removing the wedge, because the box must be jacked up that much higher. Another thing, the increased bearing of that wedge amounts to a very little, because the lateral motion of the car is absorbed at the end of the axle, so a strain on this is not unduly severe.

C. F. Thiele (P. C. C. & St. L.): I think with the 1/32 in. below the dip of the wedge, it will not be necessary to jack the box any higher.

Mr. Brazier: I want to congratulate the committee on their work—I think they have done very excellent work—and I move that the report be accepted. But I want to call attention to paragraph 35, "Marking of Freight Cars." That is what we all delay in doing. In the past ten years, 10,478 odd points have been stencilled. Furthermore, I want to congratulate the committee, referring to their recommendation in paragraph 41, "Classification of Cars," and referring to standard refrigerator cars. They have always claimed they did not have meat hooks or everything in it; and I think this is a good thing.

Mr. LaRue: I would like to call attention to paragraph 20, "Signal Lamp Socket." It has been the understanding, I believe, of the manager of the Rock Island for the past four or five years that the bracket should be over on the letterboard; and we have worked to that end. I dislike very much at this time, when markers are being used as signal expressions, that these should be put down on the corner posts as low as that. I think that the 45 deg. angle is correct.

Mr. Schroyer: I am glad to see the report of this committee, for it coincides with the Northwestern and shows we have done right; and the Pullman got it from the Northwestern, and the Pennsylvania got it from the Pullman. I think the report is all right and the Rock Island all wrong.

Mr. Kleine: I suggest this question be referred back to the committee for further investigation, and that investigation also adopt gages for both signs and lamp brackets.

D. E. Fitzgerald (M. P. & St. L.): The question of the location of these lamp brackets came up on the Frisco about two months ago, and is now under discussion, and the fact that the American Railway Association has brought it up suggests that it is of considerable importance. A great number of our engineers have suggested that there is a tendency at night to cloud the view of the lamp in that location; and there is the same tendency where you have it on observation cars; and I think before it is decided to locate it definitely on the corner posts, we ought to give the proposition of safety considerable consideration. For instance, on a wreck that occurred several months ago, it was said if the lamps had been located a little higher, the engineer could have seen them, but on account of dip in the

track, he could not see the tail ends; and they were located on the corner posts.

Mr. Kleine: The recommendation they wish to make at this time is that the socket should be located on a 45 deg. angle. Now, that depends on the radius of the angle, as to how close that socket will come to the side of the car. The lens can be adjusted only by individual roads. On the open platform cars you may carry them up, on the vestibule cars down on the corners. In some roads you can only get a partial lens; other roads require a full lens. If you can give a dimension from the side of the car to the lens socket, then the lamp brackets can fit.

Mr. Goodnow: This recommendation came from the secretary of the American Railway Association to us to do this; so we took it from that, that they had not established one; otherwise it would not have been referred to us.

Mr. Seley: I think particularly the remarks of Mr. Fitzgerald emphasize the fact, and I would be in favor of further conferring with the Committee on Transportation of the American Railway Association advising them that the discussion of the matter in this convention had brought out the fact that there were two locations in general use, one approximately, 9 ft. 6 in. from the rail on the corner post, and also as stated by Mr. LaRue; and I would let them say whether two locations would be permissible, or which of the two would be advisable as to transportation.

It was moved and seconded that the report of the committee be received and the recommendations concurred in, with the exception of the lamp brackets and sockets.

Mr. Vaughan: On the question of New Subjects, section 43, which reads: "In accordance with action of this association, 1911 convention, with respect to the establishment of a maximum standard or limiting height for the running board of a standard dimension box car"—that is a subject in which we are very much interested, and I will put the clearances as stated by the committee, but we find that the height would only be limited to 13 ft. 10½ in. Now this subject to us, and I think to all roads, is an important one from the fact that we have in Canada legislation in connection with the height of clearances which is demanded, and I understand some of the bills have been introduced in the United States, and we feel that it is impracticable to discuss the construction of cars of more than standard height. That is a matter that rests as a rule outside of the car department. But one thing we can do and that is to fix the maximum height or standard dimension box cars. I think there is no objection to taking a limited height of 13 ft. 6 in. on the running board of standard box cars. As nearly as we can ascertain, there are only about 30,000 cars in the United States and Canada which exceed this limit. It seems to me just as reasonable for this association to fix a limited height for the running board of a car, as it has been in the past to fix the height of eaves, etc. But if we can establish a limited height that constructors would work to in their cars, there would be some hope of keeping this running board height down to a certain limit. The difference may not appear very great, but if it amounts in practice to nearly 6 in. in construction of bridges and in structures of that sort, it is important, and the amount of that kind of work that has been going on in Canada and the United States in recent years has been considerable. We are very much interested in seeing some action taken by this association that will put this matter in such shape that we can show the standard of the running board shall not exceed a figure to be determined by the committee on standards, which we hope they can make 13 ft. 6 in. for a standard dimension box car.

Mr. Goodnow: In answer to Mr. Vaughan, I might say in considering this, one of the questions that came up in the committee's mind was the question of the longitudinal running board, coming up in connection with the outside metal roof, which naturally increased the height of the car at the eaves, and affected the height of the box car at that point. The committee felt that as we are limited now by the height of the brake wheel and the clearance of the brake wheel under the United States appliances standards, to go any further would be tying it down pretty tight. I should say you could not take the benefit of half an inch or an inch especially with outside metal ropes and the additional running-board that is required with that roof.

Mr. Vaughan: I should say there is no reason why the outside metal-roof designer should not be kept down to designing to the limit. It is the height of the running board that is involved in this question. If we are going to vote on the motion now, I would wish to make a motion that the report on the running board be referred back to the committee on standards.

The motion was seconded.

The report of the committee was then accepted.

TRAIN BRAKE AND SIGNAL EQUIPMENT.

The following subjects were referred to the committee for investigation and report:

STANDARDS FOR AIR BRAKES ON FREIGHT CARS.

This refers to item 12 of the 1911 report of the committee on standards. It was suggested that the double hand-brake arrangements shown on Sheet M. C. B. 18 do not conform to requirements of Interstate Commerce Commission and should be made



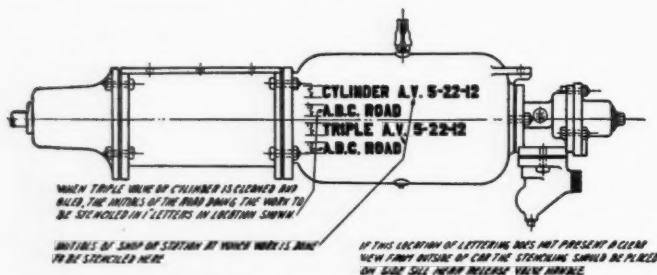
R. B. KENDIG,

Chairman, Committee on Train Brake and Signal Equipment.

to work with the air. The committee has revised Sheet 18 as suggested, showing the addition of a hand-brake lever connected to the cylinder lever with a chain in a manner that gives the same hand-brake power at each end of the car as that given by the single hand-brake arrangement. On account of the crowded condition of M. C. B. Sheet 18, the details had to be rearranged.

HIGH-SPEED FOUNDATION BRAKE GEAR.

This refers to item 48 of the 1911 report of the committee on standards. The committee has revised Sheets J, K and L to conform to the safety appliance standards. The revision contemplates a minimum of changes on old equipment. The cylinder is reversed, bringing the push rod at the opposite end from that previously shown; the cylinder lever is chain-connected to one end of the hand-brake lever. On new equipment the use of the floating lever fulcrum connection and chain may be discontinued and a fulcrum similar to that shown for the intermediate lever, Sheet J, can be substituted for these details on either of the 3 Sheets J, K or L. The hand-brake power is to be multiplied by means of a floating chain sheave on the hand-brake connection rod.



ABCDEFGHIJKLMNOPQRSTUVWXYZ &
1234567890

Method of Marking Cleaned Brake Apparatus.

MARKING BRAKE APPARATUS.

The arbitration committee suggests that the stenciling should be illustrated in the rules, and directed that the committee submit a drawing showing how this should be done. The committee has prepared that shown in the accompanying illustration for this purpose. In order to condense the stenciling as much as possible, the words "cleaned and oiled," and "tested," have been omitted, as their significance is well known by all concerned.

CLEANING OF TRIPLE VALVES.

This subject was introduced at the convention by G. W. Wilden last year. Since that time Mr. Wilden has reported to the committee 66 specific cases between December, 1909, and June, 1911, where triples on N. Y. N. H. & H cars were cleaned and tested more frequently than that required by the rules, involving an average cost of 81 cents per cleaning. The committee, after investigating this subject, has no recommendations to make other than the proper stenciling and information required on the repair card as provided for in the rules of interchange.

M. C. B. HOSE LABEL.

The arbitration committee referred to this committee the advisability of adopting and having copyrighted a characteristic badge or label for M. C. B. hose, which should be of such form and in such location as to be readily observable by the inspector without going between the cars, and permission to use such label to be given the manufacturers only on their request. The committee finds that a copyright, such as suggested can not be obtained by the Association, which is a non-incorporated body, but has prepared a drawing showing that portion of the standard label marked "M. C. B." extended so as to completely encircle the hose. This would make the label distinctive and readily observable without the necessity of going between the cars. If the proposed change in label were adopted by the Association, the committee would further recommend that Rule 58 in the rules of interchange be modified to read: "On and after September 1, 1914, delivering line responsible for hose not so labeled."

SIGNAL-HOSE COUPLING.

The executive committee referred to this committee the following communication from a member:

"There have been several cases where the efficiency of the air-brake system on passenger trains has been considerably reduced on account of the signal hose being coupled to the air-brake hose. When the signal-hose couplers are new it is very difficult to cause them to couple with the coupling on the air-brake hose, but when they become worn it is possible to make an imperfect coupling with ease."

The committee would recommend as a solution of this difficulty the adoption of a signal-hose coupling which would be exactly the same size and have exactly the same contour lines as the brake-hose coupling proposed to the convention last year and adopted by letter ballot, except that in its coupling feature the position of coupling lug and arm be reversed, making a left-hand coupling for the signal-hose. Such a coupling could not be imperfectly coupled with the brake-hose coupling. The gaskets or rings would be the same, and there would need be no experimenting with the coupling or contour lines.

AIR-BRAKE HOSE.

The committee has had called to its attention the desirability of improving the air-brake hose conditions. The specification for air-brake hose has been in use since 1905, and does not appear to produce a satisfactory hose. It would seem desirable to have this subject investigated by a special committee, giving attention to a revision of the specification requiring more severe stretching, pressure, unwinding and unwrapping tests, and also attention to the mounting of hose so as to produce a tight fit on the nipple.

The report is signed by:—R. B. Kendig (N. Y. C. Lines), chairman; R. K. Reading (Penna.); B. P. Flory (N. Y. O & W.), and E. W. Pratt (C. & N. W.).

The printed report of the committee, as presented to the meeting was revised by Mr. Pratt in the following particulars: The second item was amended to read as follows:

"Report of committee on standards, item 48 of 1911 proceedings, that sheets M. C. B., J, K, and L be referred to the committee on train brake and signal equipment for revision to conform to the safety-appliance standards, which provide that the hand brake shall operate in harmony with the power brake. The committee has revised sheets J, K and L as instructed. The revision contemplates a minimum of changes on old equipment. The cylinder is reversed, bringing the push rod at opposite end from that previously shown; cylinder lever is chain-connected to one end of the hand-brake lever. The

use of the floating lever fulcrum connection and chain may be discontinued, and cylinder and floating lever connection (B-C 2-A), and intermediate and truck lever connection (B-C 7-A) made in one piece, thereby eliminating five parts: B-C 5-A, B-C 4-A, B-L 2-A, B-C 3-A and B-L 3-A, as shown on sheet J."

The third item is corrected to read as follows:

The arbitration committee suggested that the stenciling should be illustrated in the rules, and directed that the committee submit drawing showing how this should be done. The committee has prepared for this purpose an illustration as shown. In order to condense the stenciling as much as possible, the words 'cleaned and oiled,' and 'tested,' have been omitted, as their significance is well known by all concerned.

"If the stencil reference to the cylinder and the stencil referring to the triple valve be made in separate pieces, this will be found convenient in avoiding the raised letters formerly cast on the auxiliary reservoirs."

In the item on M. C. B. hose label, the date at the end of the paragraph was corrected to the year 1915, the last sentence corrected reading as follows: "If the proposed change in label were adopted by the association, the committee would further recommend that Rule 58 be modified to read: 'On and after September 1, 1915, delivering line responsible for hose not so labelled.'"

At the end of the item on signal hose coupling, is added the following:

"(Samples of these couplings will be placed on the rostrum before the convention is over.)"

DISCUSSION.

I. S. Downing (L. S. & M. S.): In regard to the suggestions of the committee, they are all right, but we have experienced a great many times where an air line was defective, and we have coupled on to the signal line and thus kept the air on the train. If this was changed so it would be impossible to do this, we could not use the signal line unless we have a large pipe on the signal line and standard hose the same as the air hose. It has saved us a great many delays, especially in the middle of the night.

T. L. Burton: That question was brought to the attention of the committee when making the recommendations and was given careful consideration. The committee believe the objections raised could be easily met by carrying in the baggage car a reducing screw that could be put on to the end of the hose and inserted either into the signal pipe or the brake pipe, or, if necessary, a combination fitting that would couple up either brake or signal with a reducing screw; and, after the most careful consideration, the committee did not believe carrying this fitting in the baggage car was more objectionable than the failure arising through improperly coupled hose. There are two questions to be considered, one of safety, and one of carrying this special fitting.

It was moved and seconded that the report be accepted and referred to letter ballot.

Mr. Pratt: I hope the members will consider when voting on this matter, that which has been last under discussion. It is very handy to make a wrong coupling in order to save a moment or two on trains, specially made up, where a change in the order of the cars is a serious handicap; but it is a very much more serious matter when you are going into an "open draw," with a false coupling made unintentionally, and where, as Mr. Burton has suggested, there are other ways that will overcome this dangerous proposition, it is well to consider them.

The motion of acceptance was carried.

TESTS OF BRAKE SHOES.

As has been the case for the past two years, this committee has considered the subject of brake-beam standards as well as that of testing brake shoes.

BRAKE SHOES.

In its report of last year, the committee made the following recommendation:

"1. That some further work be undertaken by the Association for the purpose of connecting the results obtained under high brake-shoe pressures with those upon which the Association's specifications are based."

This recommendation was referred to the executive committee. Previous to 1911, the tests on brake shoes had been confined to pressures of 2,808, 4,152, 6,840 and 12,000 lbs., and to speeds of 20, 40 and 65 m. p. h. The tests made by the committee last year at a speed of 80 m. p. h. and at pressures of 12,000, 14,000, 16,000, 18,000 and 20,000 lbs. established new standards for high-pressure and high-speed service.

In order to complete the series and to furnish data for

high-pressure specifications, it is desirable that some further tests of an intermediate character should be made on the shoes tested last year. The committee accordingly recommended for this year's program tests on these same shoes at a speed of 65 m. p. h. and at pressures of 12,000, 14,000, 16,000 and 18,000 lbs. The pressure of 20,000 lbs. is not included, since the results obtained last year show that no practical advantage attends the use of pressures higher than 18,000 lbs.

The committee further recommended that from the data thus obtained, specifications should be prepared covering the use of shoes in heavy passenger work. For various reasons, the executive committee of the Association did not find it expedient to appropriate money this year for these experiments and accordingly no work has been done.

In view of what has been said above, the committee feels that further tests should be made to complete the series and render available for the purposes of the Association the high-pressure work already done.

Weight of Fly-wheel on Brake-shoe Testing Machine.

During the discussion of the report of the brake shoe committee at the last convention, T. L. Burton (C. of N. J.), raised a question as to the desirability of varying the weight of the fly-wheel on the testing machine so as to correspond to the brake-shoe pressure and thus keeping the per cent. of braking power practically the same in the different tests. After some discussion, the question was referred to this committee for consideration.

The committee has considered the question and sees no



C. H. BENJAMIN,
Chairman, Committee on Brake Shoe
Equipment.

good reason for making the change referred to. The fly-wheel of the machine was originally designed to store kinetic energy equivalent to that apportioned to one wheel of a 60,000-lb. capacity freight car. Fortunately, this corresponds very nearly to the energy per wheel of a modern 12-wheel passenger coach weighing 145,000 lbs.

In testing a brake shoe under these conditions, the method adopted is the same that would be used in testing a freight car or passenger coach of the above weights at different speeds and brake-shoe pressures. The only effect of increasing the mass of the fly-wheel would be to lengthen the time of stopping and to heat the shoe to a higher temperature. This has the effect on some shoes of increasing the mean coefficient of friction and on others of decreasing it. The committee does not feel that this would have any bearing on the question of the proper brake-shoe pressure to use under service conditions.

Recommendations.

In concluding this part of the report, the committee would make the following recommendations: That further tests be made on the shoes tested last year to connect the results with those previously obtained. These tests to be made at a speed of 65 m. p. h. and at pressures varying from 12,000 to 18,000 lbs.

BRAKE BEAMS.

Changes in Drawings.

The committee would recommend some minor changes in

the drawings of brake head and beam as shown on Sheet M. C. B. 17 and 17-A.

1. That the drawing of brake head on Sheet M. C. B. 17 be so changed as to show the hanger hole straight with a radius of $\frac{3}{8}$ -in. at each end, to accommodate the straight hanger with filleted corners.

2. That the drawing of brake-beam gage as shown in Sheet M. C. B. 17-A be so changed as to show an opening of $3\frac{1}{2}$ in. instead of $3\frac{3}{4}$ in. in order to make the drawing conform to the text of the specification as decided by letter ballot in 1907 (see Proceedings for 1907, p. 545).

Length of Brake Beam.

In view of the present uncertainty and misunderstanding as to the standard allowances for length of brake beam, the committee would recommend the adoption of the following interpretation:

That the specifications as to length of brake beams, adopted by letter ballot in 1907, shown on page 558 of the Proceedings, be interpreted as follows:

All brake beams shall be $60\frac{1}{4}$ in. in length from center to center of brake head, with a maximum allowable spacing of $60\frac{3}{8}$ in. and a minimum of $60\frac{1}{8}$ in.; this spacing to be measured by gaging inside of the brake head key lugs. On Sheet M. C. B. 17, the drawing of brake head shall be so changed as to show the hanger hole straight with $\frac{3}{8}$ in. radius at the end.

Width of Slots in Brake Head.

The committee would recommend that the brake-head gage shown in Sheet M. C. B. No. 17 should be used for gaging the slots in the head with $1\frac{1}{16}$ in. as the minimum and $1\frac{1}{4}$ in. as the maximum width.

Brake Beam Gage.

The committee would submit the drawing of a brake-beam gage shown in Sheet 17-A (Fig. 1), of this report for consideration and trial by members of the Association, with a view of adopting such gage as recommended practice to take the place of the present gage now shown on Sheet M. C. B. 17-A. The proposed gage determines the following dimensions and adjustments: Limiting outline of brake beam; length of beam; proper alignment of the heads in relation to

each other; proper location of pin hole and center of strut, and angle of lever fulcrum.

Standard Brake Beam.

The committee would also submit the drawing of a No. 2 standard brake beam shown in Sheet 17-B (Fig. 2), of this report for consideration and trial by members of the Association, with a view of adopting such beam as Recommended Practice for No. 2 M. C. B. brake beams. The committee understands that this beam can be made without incurring liability for patent infringement for any valid and existing patent. This brake beam meets all the requirements of the Association so far as existing standards are concerned as to dimensions and also meets the physical tests required. The results of tests made at the testing laboratory of the Pennsylvania Railroad Company at Altoona, Pa., on such a beam are shown in Table 1.

DREXEL BEAM.

Load.	Deflection.	Set.
500	.000
6,000	.026	.000
6,500	.028	.000
7,500	.033	.000
12,000	.052	.000
15,000	.064	.002
500	.000
15,000	.062	.000
17,000	.068	.000
19,000	.075	.000
21,000	.083	.002
23,000	.094	.005
25,000	.103	.009
27,000	.116	.028
29,000	.147	.048
31,000	.182	.064
33,000	.236	.112
35,000	.450	.305
37,000	.335	.385
39,000	.934	.676
41,200

Bent through center. Weight, 91 lbs.

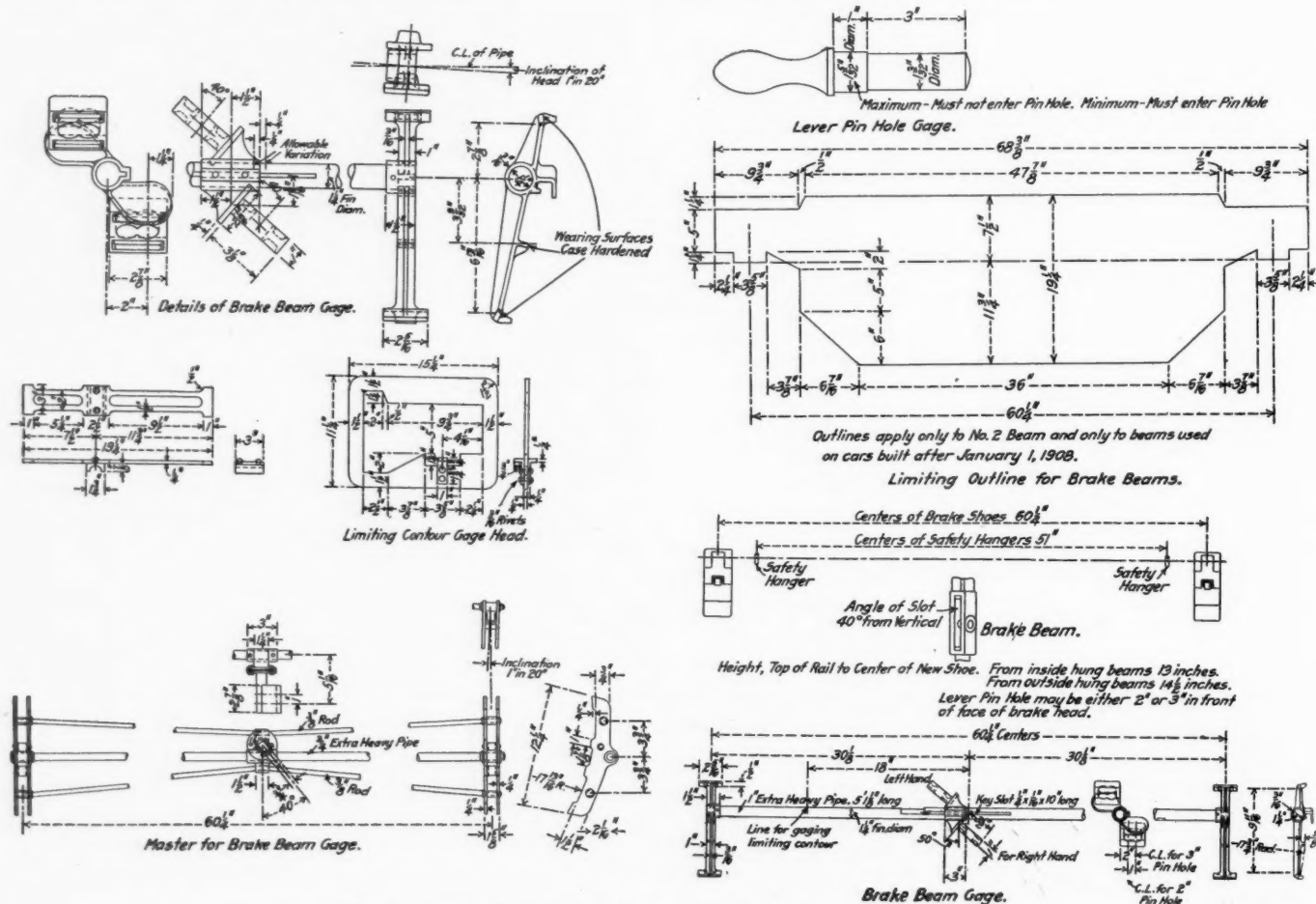
AJAX BEAM.

Load.	Deflection.	Set.
500	.000
6,000	.027	.000
6,500	.029	.000
7,500	.034	.000
12,000	.055	.000
15,000	.068	.000
17,000	.079	.001
19,000	.085	.003
21,000	.097	.005
23,000	.104	.006
25,000	.113	.007
27,000	.126	.010
29,000	.136	.014
31,000	.155	.026
33,000	.190	.060
35,000	.389	.234
37,000	.520	.360
39,000	.900	.847
40,400
....

Bent through center. Weight, 95 lbs.

TABLE 1.—RESULT OF TEST OF DREXEL AND AJAX BEAMS
PENN. R. R. LABORATORY, ALTOONA, PA.

It is the feeling of the committee that the time is ripe for consideration of a standard beam which shall meet the present requirements and specifications.



Numbering Brake Beams.

It is recommended that in order to designate an M. C. B. brake beam, it be required that the letters "M. C. B." and the numerals "No. 1" or "No. 2," as the case may be, be cast, forged or stamped on the fulcrum. It is further recommended that after January 1, 1913, this be cast on the fulcrum, if the fulcrum be a casting, or forged on the fulcrum if the fulcrum be a forging.

New M. C. B. Association Sheets.

In accordance with what has been said before, the committee would submit new M. C. B. Association Sheet No. 17 to be substituted for the existing M. C. B. Sheet No. 17. The new sheet contains the standard brake head, shoe, key and gages for same in accordance with the last ballot of the Association. The gage for head also shows the maximum and minimum lines for gaging the top and bottom of slot opening, with $1\frac{9}{16}$ in. as the minimum and $1\frac{11}{16}$ in. as the maximum width. One dimension has been added to the brake head, which is the width of the slot corresponding to the width of the slot in shoe, or $1\frac{1}{8}$ in.

The committee would submit M. C. B. Association Sheet No. 17-A, (Fig. 1), to be substituted for the present M. C. B. Sheet No. 17-A. This sheet contains the standard brake beam, brake-beam gage, pin-hole gage and standard limiting outline for brake beams. The diagram of angle of slot in strut, position of brake heads, together with the pin-hole gage, has been reproduced from the present M. C. B. Association Sheet No. 17-A. The limiting outline for brake beams has been modified in accordance with that shown on page 470, adopted in 1911 by the Association as the new limiting outline for brake beams, and there has been substituted a new brake-beam gage to take the place of the old gage shown on this sheet, in accordance with suggestions of the committee, for the approval of the Association. The committee would substitute a new sheet known as M. C. B. Association

Sheet No. 17-B. (Fig. 2), which shows a proposed No. 2 standard brake beam with details, standard channel, strut and key-way gages for both the 2-in. and 3-in. pin-hole dimensions in front of brake head. This is the brake beam referred to in the preceding paragraph and is one which will meet all the requirements of the Association so far as existing standards are concerned, and will also meet the physical test required.

The report is signed by:—C. H. Benjamin, (Purdue Univ.), chairman; C. D. Young, (Penna.), and R. B. Kendig, (N. Y. C.).

DISCUSSION.

M. K. Barnum (I. C.): The road with which I am connected has made quite an investigation of the brake shoes that come to our scrap pile, and we have found a great many are worn on the flat of the face, and that a great many have the outside edge of the shoe overlapping the rim from half to an inch to an inch, and the only conclusion we can draw is that the brake beam is too long by about $\frac{1}{2}$ in., and our observations indicate that this overlapping of the rim tends to shorten the efficiency, to shorten the life of the shoe, and tends to brake the wheel unequally. I would therefore prefer the paragraph with regard to the length of the brake beam to be changed, to make the standard length $59\frac{3}{4}$ in.; a maximum of $59\frac{7}{8}$ in.; and a minimum of $59\frac{5}{8}$ in.

F. F. Gaines (C. of Ga.): My experience entirely coincides with that of Mr. Barnum. I went into this thing some 8 or 10 years ago, and I found the shoes overhung on one side, and ruined the brake beam, and started the flange on the opposite beam, and I think the $59\frac{3}{8}$ in. is very much better than $60\frac{1}{4}$ in.

C. D. Young (Penna.): I would like to say this subject was gone into at the time the 60¼ in. was established by the 1906 committee, and they presented diagrams showing the relative location of the shoe on the wheel, and I would think it would be a mistake to adopt this dimension offhand without giving the committee an opportunity to determine what other troubles may arise from a closer dimension than 60¼ in. I am inclined to

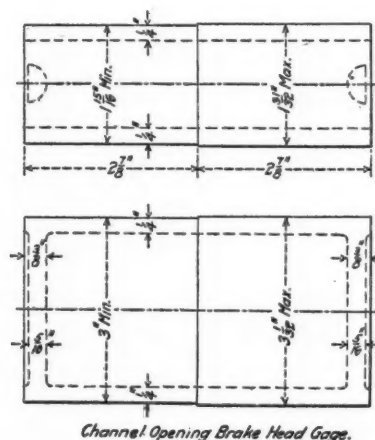
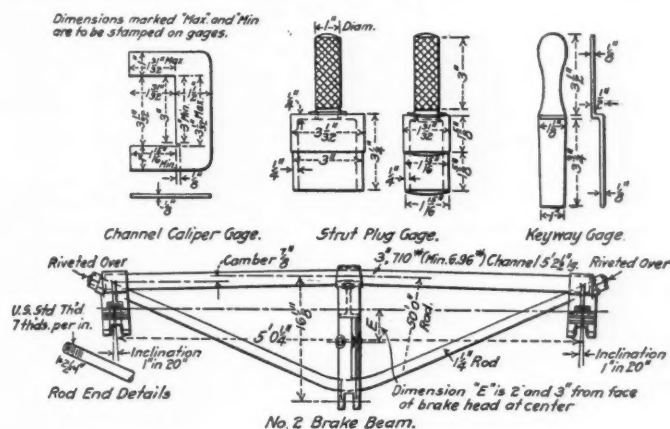
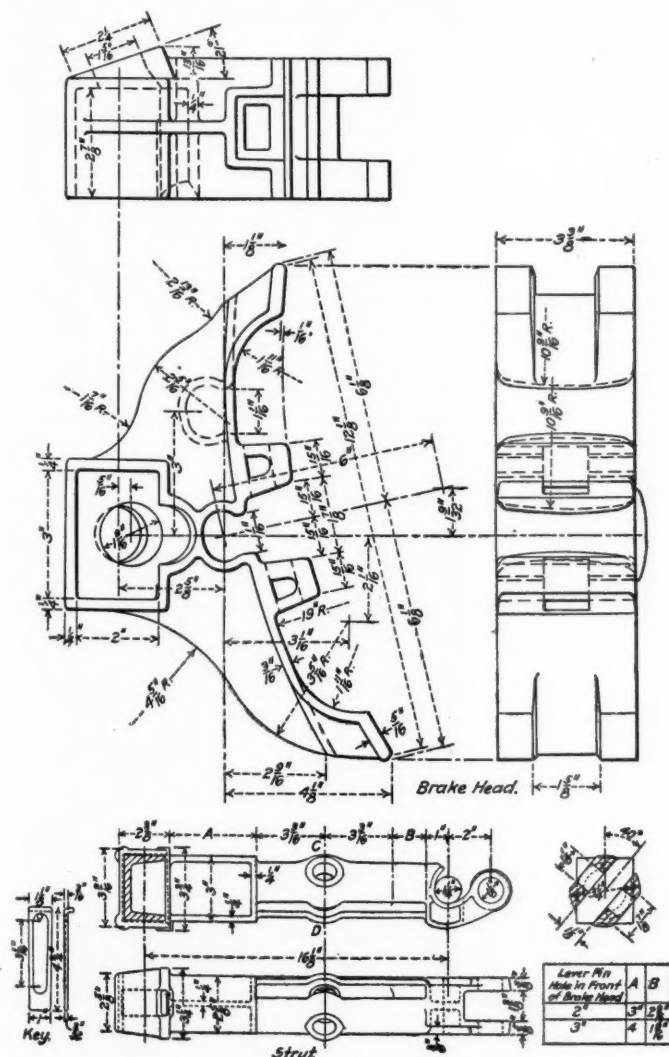


Fig. 2—Standard Brake Beam to be Adopted as Recommended Practice.

believe we will have very high flange wear due to the shoes crowding the fillet of the wheel if we close in the $60\frac{1}{4}$ in. dimension, and I would suggest that the subject be referred back to the committee for further consideration.

In view of the fact that the committee on brake beams investigated this subject at one time and we have had this practice in vogue for 5 years, I think it would be hasty to adopt a new dimension in view of the work that has gone before, and I would make an amendment that the subject of the dimension of $59\frac{3}{4}$ in. as the nominal length spacing of brake beam be referred to the committee on brake beams for further consideration, and report next year.

L. C. Ord (C. P.): The Air-Brake Association, I understand, have a committee on this subject, which has made a recommendation of 60 in. for the length of the beam and I ask if it would not be well to have that committee co-operate with this committee in investigating this subject, in order to determine the standard length?

Mr. Young: I think I may speak for the committee that they will be glad to co-operate with the committee of the Air-Brake Association in order to have the dimension made proper.

Mr. Gaines: I tried out that dimension by placing several beams with the old dimension, and with the shorter dimension on tenders, and followed the matter up by inspecting the brake beams regularly, and we found that we had less flange wear and brake shoe wear, and the thing worked much more evenly, with the shorter dimension than with the standard dimension.

C. A. Seley (C. R. I. & P.): I think that we should adopt the second portion of this report with the exception named. I would like to say just a few words about the new association brake beam. I am very much interested and gratified to note the progress in the matter of establishing a standard, but I am also persuaded that we are not ready to adopt this beam as recommended practice at this time.

Although the date of this report is April 18, indicating proper activity on the part of the committee, it was not in our hands for analysis until within the past week. Furthermore, I know that if this is adopted, that you make the new standard beam 15,000 lb. beam for No. 2, instead of 12,000 lb. beam, in fact, a 17,000 lb. beam, if you take the indication of the first part of the test, which is within the range of a No. 2 beam test.

In the short time I have had to look over the report of the committee, I am of the opinion that possibly it would pay us to spend a little more time in the analysis and working out of this standard beam.

There are a number of dimensions one way and another which make this beam a pretty fine haired one to manufacture, and I think that costs with us are regulated by the number of points which we have got to tie and possibly a little more investigation might develop the fact that some of these points are tied a little too closely. Just as an illustration of what I mean, I notice, for instance, in the No. 2 brake beam the radius of the compression member. Now, I believe that the ordinary method of assembling these beams is not to curve them before they are put in, but to make the curve in assembling the beam, and some captious inspector might find out it was not exactly 50-in. radius, and make an objection, and I think there is one measurement that might be eliminated, and possibly on further study of the design, we might be able to do something more in that line, and while I do not wish to be an obstructionist or discourage the adoption of a standard beam I think these points should have consideration.

I would, therefore, move that in accepting the report of the committee, and submitting it to letter ballot, that the matter of the new standard beam be referred back to the committee for further consideration with the idea that not only the committee, but the members of the association can have a better chance to check over and study the report of the committee.

Mr. Young: By reference of the report back to the committee, I presume that Mr. Seley is simply asking for time to ascertain whether the construction as here offered is a suitable one. So far as the detailed points which he raises are concerned, I might say that the beam is made in accordance with this drawing and with a 50-ft. radius of the compression member, the inclination of one in twenty of the head comes out exactly, and it is impossible to build a beam in accordance with the requirements of the association and with that inclination without giving the beam $\frac{7}{8}$ -in. camber, which is virtually the same as making it the 50-ft. radius.

I believe that the association should go slow in the case of any recommended practice design, and it may be good policy to defer any action, but I do not quite see what the committee can do. They have done their work, they have presented the drawings, and presented the results of tests, and they offered the beam as recommended practice. If the beam is found wanting, when adopted in recommended practice, it is a very simple matter for us to change it or eliminate such dimensions with regard to which elimination may be desirable.

I overlooked, previously, one point which Mr. Seley brought up, namely, that the tests show we have a 15,000-lb. beam. That is true. We have also tested beams similar to these, in our laboratory, and for the information of the members, I will say that some of the beams test 15,000 lbs.; in other words, we do not construct a beam which would be so close to the rejection limit that it would be handicapped under our specification, by rejection in re-testing, and the beam, in the opinion of the committee, is amply strong to meet the specified requirements, and if constructed in accordance with the drawing, no such difficulty will exist, and it is intended to be a 12,000-lb. beam.

Mr. Seley's motion was put and lost.

The President: Now, we will take a vote on the original motion, *i. e.*, to accept the committee's report and refer it to letter ballot, with the exception of the length of brake beam. The motion was carried.

CAR WHEELS.

At the convention in June, 1911, a number of recommendations were made relating to questions of standardizing solid steel and steel-tired wheels for freight and passenger cars. These subjects, together with other matters pertaining to the chilled cast-iron wheels were referred by the executive committee to this committee for action and recommendation. The subjects are briefly outlined as follows:

Prepare specifications and physical test for cast steel, rolled steel, forged and rolled steel, and forged steel wheels. Prepare drawings showing principal dimensions of cast steel, rolled steel, forged and rolled steel, and forged steel wheels. Prepare drawings showing a standard method of fastening for built-up steel-tired wheels. Prepare drawings showing proposed M. C. B. standard gage for measuring the thickness of service metal of solid steel and steel-tired wheels. Consider any changes or corrections necessary in specifications for chilled cast-iron wheels.

The most important work was the subject of specifications, dimensions and tolerances for solid forged and rolled, rolled or cast steel wheels for freight and passenger car service.

The committee requested the various makers of solid steel and steel-tired wheels to submit drawings and specifications for steel wheels now in service; also requested similar information from railways using steel wheels.

Realizing the advisability of cooperation between railways and the makers of steel wheels, the committee addressed the manufacturers suggesting a joint conference at Pittsburgh, Pa., December 8, 1911.

The proposed work of the committee was explained to them and met with general approval. It was brought out at this meeting that the present tendency pointed toward a number of different designs and specifications, instead of adopting as few standards as possible.

The committee was advised that a committee representing the wheel manufacturers and the American Society for Testing Materials was working jointly on designs and specifications for steel wheels. Specifications were prepared by this committee for freight and passenger wheels, copies of which were furnished to the M. C. B. committee. After reviewing them, the committee recommended a few changes in regard to tolerances, and the revised specifications will appear as an appendix to this report.

There are a number of questions relating to the chemical and physical properties of carbon and alloy steel, and method of treating and handling the steel in its process of manufacturing that are now being investigated.

On this account, the committee has thought it unwise to recommend a standard specification at this time, governing the

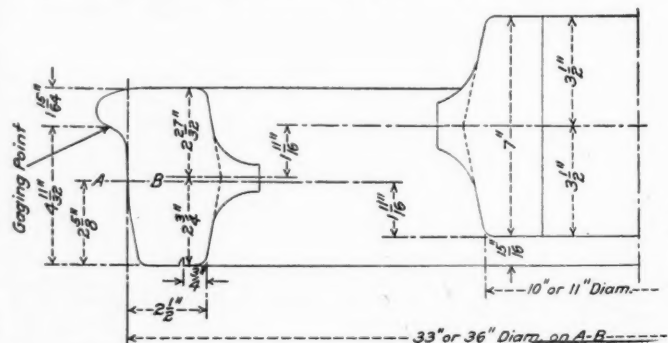


Fig. 1—Solid Steel Wheel for $4\frac{1}{4}$ in. x 8 in., 5 in. x 9 in., and $5\frac{1}{2}$ in. x 10 in. Axles.

quality of the material or the method of manufacturing solid steel wheels, and has only recommended the adoption of a specification governing the maximum variations that will be allowed in the fabrication of new wheels. This is shown in recommendation No. 1.

It will be noticed that only one specification has been recommended which applies to both passenger and freight car wheels. Attention is also called to the fact that the question of specifications for cast-steel, one-run wheels has not been considered at this time.

The committee submits as its second recommendation, drawings of 33-in. and 36-in. solid steel wheels for freight and passenger service, as shown in Figs. 1 and 2. As there is some

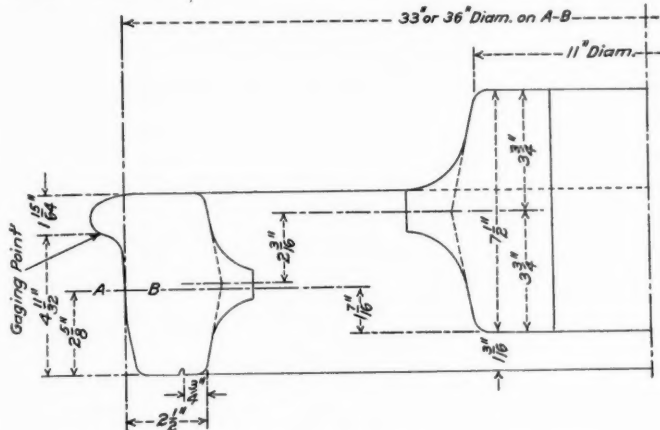


Fig. 2—Solid Steel Wheels for 6 in. x 11 in. Axles.

difference in opinion as to the correct shape of the plate of the wheels, this has not been shown, and no mention as to thickness of plate and its tolerance is made in the proposed specification.

It will also be noticed that two different hub diameters—10 in. and 11 in.—are recommended for wheels used on axles up to and including 5 1/2 in. by 10 in., the use of either diameter to be optional with the purchaser.

On account of the necessity of allowing 1/16 in. tolerance below the specified thickness of flange due to inaccuracy in fabrication, the committee suggests as its third recommendation that the thickness of flange be increased, making the rim 5 19/32 in. wide instead of 5 1/2 in., which is the present standard. This will make the contour of the tread and the flange of steel and steel-tired wheels same as the chilled cast-iron wheels, and the same mounting and check gages can be used.

Attention is called to the drawings showing the various gages that will be required in connection with the inspection of solid steel and steel-tired wheels.

In regard to the question of tire fastenings for steel-tired wheels, the committee has found that at the present time there are a great number of different methods used, and after careful consideration of this subject with the manufacturer of steel-tired wheels, it was suggested that a tire held by shrinkage and bolts be adopted as recommended practice as shown in Fig. 8.

This type of fastening, in the opinion of the committee, has the greatest merits of any in use, and is not covered by patents, leaving it open for any manufacturer to produce. With this type of fastening cast-iron or cast-steel spoke or solid centers can be used.

In regard to the question of determining a proper physical test for the purpose of detecting internal strains in solid steel wheels, the committee, after due consideration of this subject, feels that it will be necessary to make further investigations and experiments before submitting a recommendation, and suggests that this will be a part of the committee's work for next year.

In reference to chilled cast-iron wheels, the committee has received from the Association of Manufacturers of Chilled Car Wheels several suggestions, which are as follows:

1. Drawing for chilled cast-iron wheels for cars of 140,000 lbs. capacity.
2. Increase thickness of flange 3/32 in. at base line, and compensate for this increase by mounting the wheels 3/16 in. farther apart, and change the mounting gage to suit.
3. Revision of weights of wheels for cars of 80,000 lbs. capacity.
4. Revision of paragraph in wheel specification relative to overweight at the manufacturer's expense.
5. Revision of M. C. B. wheel specification to include wheels for cars of 140,000 lbs. capacity.

6. Confine rejections on account of failure of test wheels to wheels represented by same tape size only.

7. Establish maximum breaking power as well as gross load for each design of wheel.

8. Revision of M. C. B. Rule 76 to specify depth to which freight should be worn hollow.

9. Revise the M. C. B. standard drawings for cast-iron wheels to show the standard size core. Also revise the standard wheel specification to the effect that overweight of wheels above the normal (due to hub core smaller than the standard) should be paid for by the purchaser.

The committee has carefully considered these recommendations and does not feel justified in recommending more than three of the changes at this time.

The question of increasing the thickness of the flange and mounting the wheels 3/16 in. farther apart is a matter which this committee can not pass upon or recommend.

In regard to the question of design and specification for a chilled cast-iron wheel for cars of 140,000 lbs. capacity, the committee has taken no action on this subject at this time.

In regard to the question of raising the weight for the 80,000 lb. capacity wheel, the committee has not found any good reasons for a change.

In reference to the suggestion relating to the overweight of wheels at the manufacturer's expense which is brought about by the clause in paragraph 9 of the present wheel specification, which reads: "All excess weight over the maximum given to be the expense of the manufacturer." The committee has carefully considered this matter and recommends that paragraph 9 in the present wheel specification be changed as shown by the committee's recommendations.

In regard to suggestion No. 6, your attention is called to the present specification, which states that two wheels picked at random from each one hundred wheels be tested, and if these wheels fail to pass any of the specified tests, the entire lot of 100 wheels represented by this test will be rejected.

It is asserted that the rejection of 100 wheels because the chill in either extreme tape size is unsatisfactory causes many good wheels to be rejected and works a hardship on the manufacturers.

The committee has carefully considered this matter, and a change in the specification is recommended, as shown in the committee's recommendations.

In regard to the question of establishing maximum breaking power as well as gross load for each design of wheels, this question was brought up and referred to in the recommendations of last year and had particular reference to the failures of cast-iron wheels used under cars of heavy tare weight, such as refrigerator cars.

The committee has considered this question again, and upon investigation found that the trouble experienced has been largely due to the fact that too light capacity wheels, as well as axles, are being used under refrigerator cars and cars with a marked capacity of 60,000 lbs. The majority of these cars have a tare weight of 40,000 to 47,000 lbs., bringing the total weight of the car and lading up to 117,000 lbs.

If the proper size axles, or 5 in. by 9 in., are used on these cars with a corresponding weight of wheels, it is the opinion of the committee that the trouble experienced with these cars will be eliminated, and the committee would again recommend that car owners and members of this Association give this subject careful consideration in purchasing new equipment or making renewals to old cars.

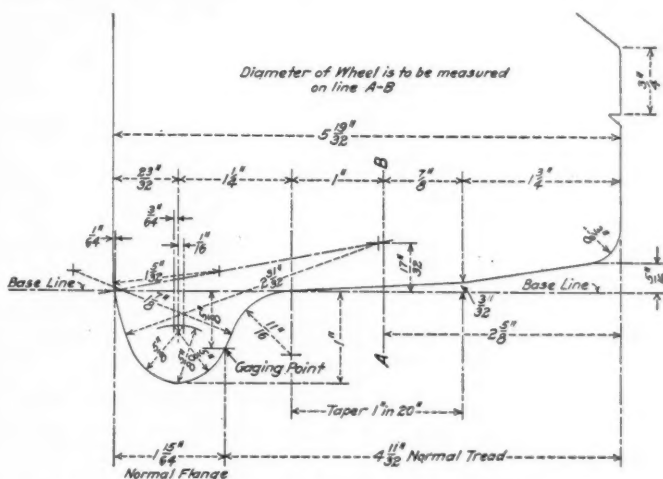


Fig. 3—Wheel Tread and Flange for Steel and Steel Tired Wheels.

RECOMMENDATIONS.

Recommendation No. 1.

The proposed specification governing the dimensions and tolerances for solid wrought-steel wheels for freight and passenger car service are as follows:

1. Wheels should be furnished rough bored and with faced hubs and have a contour of tread and flange as rolled or machined according to M. C. B. Recommended Practice (Fig. 3). They should conform to dimensions specified within the following tolerances:

2. *Height of Flange.*—The height of flanges should not be more than $\frac{1}{8}$ in. over and must not be under that specified, or 1 in.

3. *Thickness of Flange.*—The thickness of flange shall not vary more than $\frac{1}{16}$ in. over or under that specified.

4. *Thickness of Rim.*—The thickness of rim to be measured between the limit of wear groove and the top of the tread at the point where it joins the fillet at throat of flange. The thickness must not be less than $1\frac{1}{4}$ in., but may exceed this amount.

5. *Width of Rim.*—The width of rim shall not be more than $\frac{1}{8}$ in. less, nor more than $\frac{1}{8}$ in. over that specified.

6. *Limit of Wear Groove.*—The limit of wear groove to be located as shown in Fig. 3.

7. *Diameter of Bore.*—The diameter of rough bore shall not vary more than $\frac{1}{16}$ in. above or below that specified. When not specified the rough bore shall be $\frac{1}{4}$ in. less in diameter than the finished bore subject to the above limitations.

8. *Hub Diameter.*—The hub diameter may be either 10 in. or 11 in. in diameter as specified, with a maximum variation of $\frac{1}{8}$ in. above or below. The thickness of the wall of the finished bored hub shall not vary more than $\frac{3}{8}$ in. at any two points on the same wheel.

9. *Hub Length.*—The length of hub shall not vary more than $\frac{1}{8}$ in. over or under that specified.

10. *Depressions of Hub.*—The depression of the hub must be made so that the distance from the outside face of the hub to the line AB shall not exceed $1\frac{1}{16}$ in. for wheels used on $5\frac{1}{2}$ in. by 10 in. axles and under, and $1\frac{1}{16}$ in. for wheels used on 6 in. by 11 in. axles.

11. *Black Spots on Hub.*—Black spots will be allowed within 2 in. of the face of the hub, but must not be of such depth that they will not bore out and give clear metal at finished size of bore.

12. *Eccentricity of Bore.*—The eccentricity between the tread at its center line and the rough bore shall not exceed $\frac{3}{64}$ in.

13. *Block Marks on Thread.*—The maximum height of block marks must not be greater than $\frac{1}{64}$ in.

14. *Rotundity.*—All wheels shall be gaged with a ring gage made of 3 in. by $\frac{1}{2}$ in. material, and the opening between the gage and tread at any one point shall not exceed $\frac{1}{16}$ in.

15. *Plane.*—Wheel shall be gaged with a ring gage placed concentric and perpendicular to the axis of the wheel. All points on the back of the rim equidistant from the center shall be within a variation of $\frac{1}{16}$ in. from the plane of the gage when so placed.

16. *Tape Sizes.*—Wheels shall not vary more than five tapes under nor nine tapes over the size called for.

17. *Mating.*—The tape sizes shall be marked in plain figures

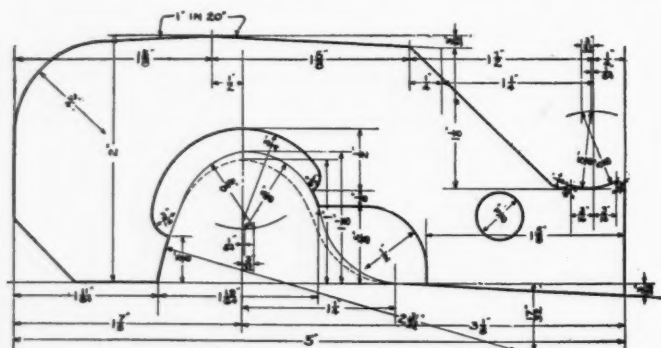


Fig. 4—Maximum Flange Gage for Solid Steel Wheels.

on each wheel. Wheels must be mated to tape sizes and shipped in pairs.

18. *Gage.*—Gages and tape used shall be M. C. B. standard as follows:

M. C. B. Standard wheel circumference measure, Sheet 16-A.

Maximum flange thickness gage, Fig. 4.

Minimum flange thickness gage, Fig. 5.

M. C. B. recommended plane gage, Fig. 6.

M. C. B. recommended gage for measuring service metal, Fig. 7.

19. *Branding.*—Wheels shall be stamped with date, heat number, maker's serial number and brand, also purchaser's name and serial number, if specified. The branding is to be done according to M. C. B. recommended practice.

20. *Inspection.*—The inspector representing the purchaser shall have free entry at all times, while his contract is being executed, to all portions of the manufacturer's plant. All reasonable facilities and necessary gages shall be afforded the inspector by the manufacturer to satisfy him that the wheels are being furnished in accordance with the specifications. All tests and inspection shall be made at the place of manufacture prior to shipment and free of cost to the purchaser. The purchaser shall have the right to make tests to govern the

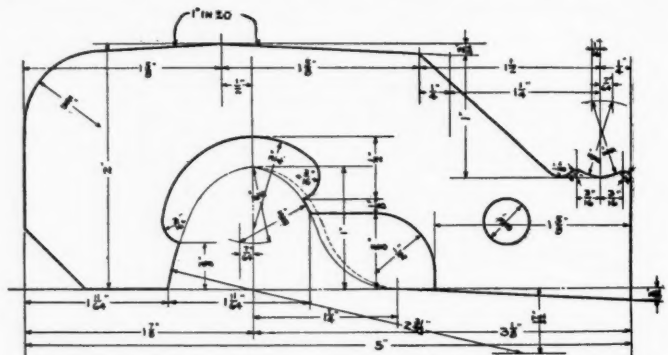


Fig. 5—Minimum Flange Gage for Solid Steel Wheels.

acceptance or rejection in their own test room or elsewhere as may be decided by the purchaser.

Samples of rejected material must be preserved at the laboratory of the purchaser for one month from the date of test report. In case of dissatisfaction with the results of the tests, the manufacturer must make claim for a rehearing (should he desire to do so) within that time. Tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the mill.

Recommendation No. 2.

It is recommended that the size and dimensions for solid steel wheels for freight and passenger cars be adopted as shown on the following drawings:

33-in. and 36-in. solid steel wheels for $4\frac{1}{4}$ in. by 8 in., 5 in. by 9 in. and $5\frac{1}{2}$ in. by 10 in. axle, Fig. 1.

33-in. and 36-in. solid steel wheel for 6 in. by 11 in. axle, Fig. 2.

Recommendation No. 3.

It is recommended that the thickness of flange for steel and steel-tired wheels be increased $\frac{3}{32}$ in., making the contour to the base line same as the cast-iron wheels, as shown in Fig. 3, herewith, and it is recommended that this cut be shown as Fig. 5 on Sheet C, M. C. B. Recommended Practice in place of the present cut.

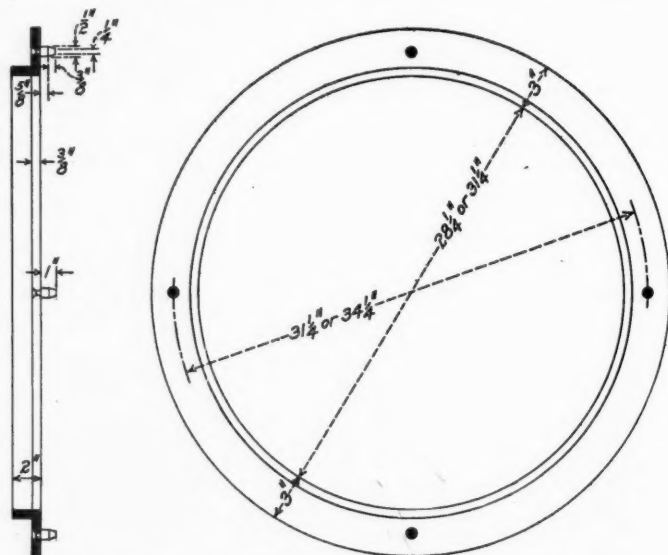


Fig. 6—Plane Gage for Solid Steel Wheels.

Recommendation No. 4.

As it is found desirable to have a gage for measuring the thickness and height of flanges as well as throat radius of steel wheels, it is recommended that the present maximum and minimum flange thickness gage shown on M. C. B. Sheet 16 be changed and made similar to that shown in Figs. 4 and 5. This will give a maximum and minimum flange thickness gage that is the same for either cast-iron, solid steel and steel-tired wheels, and also a maximum and minimum height and throat radius for steel wheels.

Recommendation No. 5.

It is recommended that a rotundity gage be adopted for the purpose of measuring the maximum distance that wheels are out of round, which shall be 3 in. wide and ½ in. thick.

Recommendation No. 6.

It is recommended that a plane gage for the purpose of

Recommendation No. 9.

It is recommended that a standard method of branding all steel wheels be adopted, as previously described.

The following changes in the present specifications for cast-iron wheels are recommended:

Recommendation No. 10.

The sixth clause under paragraph No. 4 reads as follows:

"Should the test wheel stand the given number of blows without breaking in two or more pieces, the inspector will then subject the other wheel to the following test."

It is recommended that this sentence be changed to the following:

"Should the test wheel stand the given number of blows without breaking in two or more pieces, the drop test will be satisfied and the inspector will then subject the other wheel to the following test."

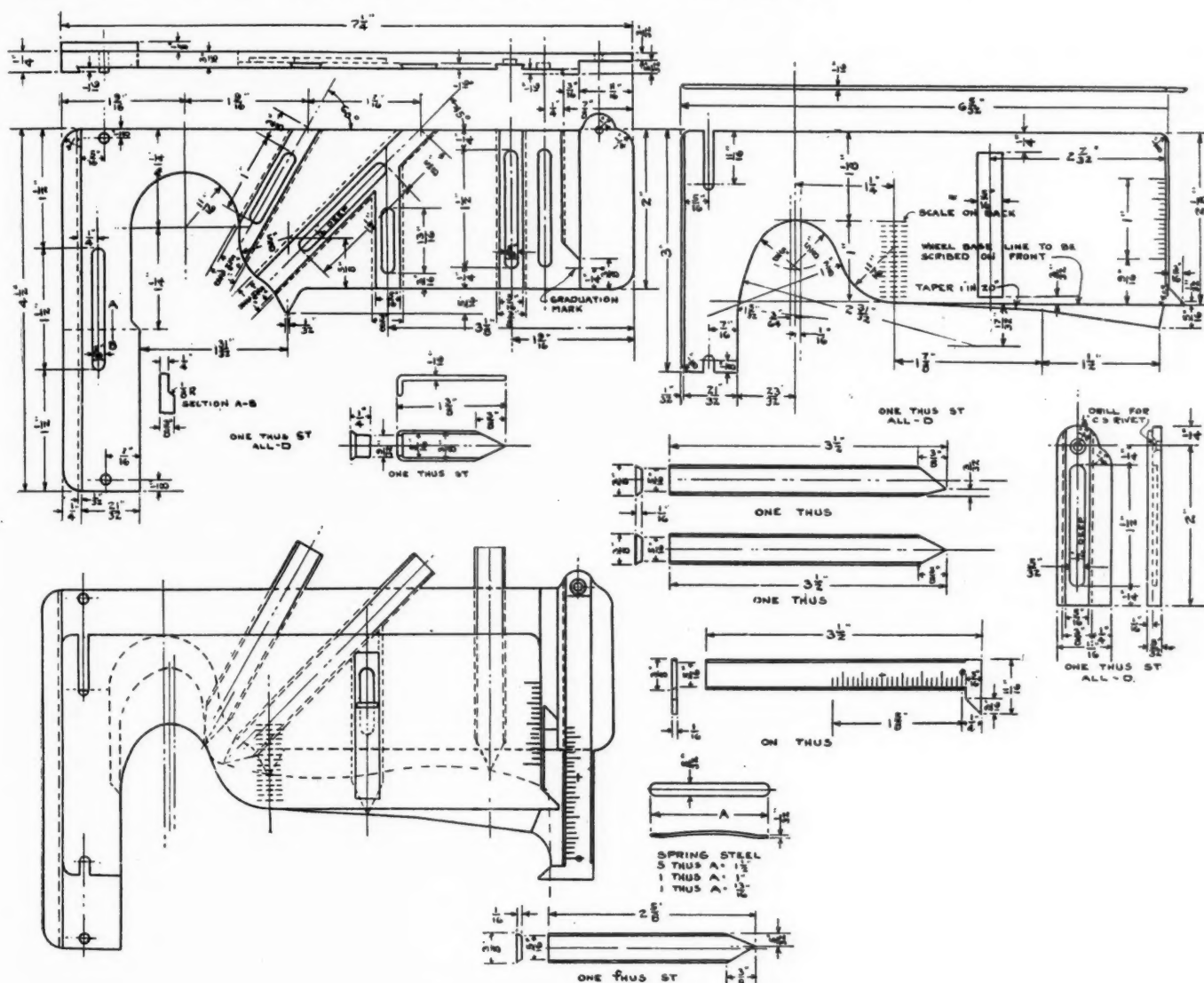


Fig. 7—Contour Gage for Steel Wheels.

measuring how much wheels are out of plane be adopted, as shown in Fig 6.

Recommendation No. 7.

It is recommended that a gage be adopted for the purpose of measuring the thickness of the rim above the limit of wear groove, as shown in Fig. 7. With this gage it is possible to measure direct the amount of metal necessary to remove to restore the tread to M. C. B. contour. It is also possible to measure direct the amount of service metal remaining above the condemning limit after the tread is restored to M. C. B. contour.

Recommendation No. 8.

It is recommended that a standard fastening for all steel-tired wheels be adopted, as shown in Fig. 8.

Recommendation No. 11.

The last sentence in the seventh clause of paragraph No. 4 now reads as follows:

"If the wheel is found broken in pieces, or if any crack in the plate extends through or into the tread, the 100 wheels represented by the test will be rejected."

It is recommended that this sentence be changed to the following:

"If the wheel is found broken in pieces, or if any crack in the plate extends through or into the tread, all wheels of the same tape size as the broken wheel will be rejected."

Recommendation No. 12.

It is recommended that paragraph No. 9, of the present specification, be changed to the following:

"Individual wheels will not be accepted which:

- "(1) Do not conform to standard design and measurements.
 "(2) Are under minimum weight.
 "(3) Have physical defects described in Section 2.

"If in any lot of 100 wheels submitted to test, the test wheel fails to meet the requirements of the drop, chill, or thermal test, then all of the wheels in tape number and weight corresponding to the test wheel will be rejected. In case the rejection is for high chill, weak breaking strength, or failure in the thermal test, the test will be continued in the next higher

solid carbon steel wheels for engine truck, tender, freight and passenger service.

A.—Manufacture.

1. *Process*.—The steel shall be made by the open-hearth process.

2. *Discard*.—The ingots from which the blanks are made shall have sufficient discard to insure freedom from injurious piping and undue segregation.

B.—Chemical Properties and Tests.

3. *Chemical Composition*.—The steel shall conform to the following requirements as to chemical composition:

	Acid.	Basic.
Carbon	0.60 to 0.80	0.65 to 0.85 per cent.
Manganese	0.55 to 0.80	0.55 to 0.80 per cent.
Silicon	0.15 to 0.35	0.10 to 0.30 per cent.
Phosphorus	not over 0.05	not over 0.05 per cent.
Sulphur	not over 0.05	not over 0.05 per cent.

4. *Chemical Analysis*.—To determine whether the material conforms to the requirements as to chemical composition specified in Section 3, an analysis shall be made from a test ingot taken during the pouring of each melt. A copy of this analysis shall be given to the purchaser or his representative.

A check analysis may be made by the purchaser from one wheel representing each melt, and this analysis shall conform to the requirements specified in Section 3. A sample may be taken from any one point in the plate; or two samples may be taken, in which case they shall be on radii at right angles to each other. Samples shall not be taken in such a way as to impair the usefulness of the wheel. Drillings for analysis shall be taken by boring entirely through the sample parallel to the axis of the wheel; they shall be clean and free from scale, oil and other foreign substances. All drillings from any one wheel shall be thoroughly mixed together.

Mr. Garstang presented the report and at its conclusion said:

Since this report was written, we find there are some roads using a 38-in. diameter wheel in passenger service. If you will refer to recommendation No. 2, of the committee's report, you will notice that the committee only recommends two standard wheels, one 33 in. in diameter, and one 36 in. in diameter; and those dimensions are to cover both passenger and freight service. In view of the fact that several roads use a 38-in. wheel, as standard, I feel, as a member of the committee, that we should have included a 38-in. wheel, and with the consent of the association, the wheel committee would be very glad to submit a drawing of a 38-in. wheel provided with the necessary dimensions and give it a classification.

I have spoken to some of the members of the standing committee on car wheels, and they agree to this, and we can furnish a drawing of the 38-in. wheel with the necessary dimensions, and exhibit the classification to the secretary in time to be printed with the proceedings if the association will agree to it.

The President: If there are no objections, the committee may submit drawings for 38-in. wheel.

DISCUSSION.

H. LaRue (C. R. I. & P.): I would like to see a drawing made of the lettering to be used on the wheel as mentioned in recommendation No. 9. I do not think we should allow the manufacturer to use anything but a standard figure and letter.

The President: Is that satisfactory to you, Mr. Garstang?

Mr. Garstang: Yes. You would like that to be presented and be a part of the committee's report?

The President: Part of the wheel committee's report.

Mr. Hennessey: I move that the report of the standing committee on car wheels be accepted and approved with the thanks of this association.

The Secretary: I ask Mr. Hennessey if his motion is intended to mean that the report of the standing committee on car wheels be received, and the recommendations contained in the report be submitted to letter ballot.

C. D. Young (Penna.): In Fig. 8, showing the contour of steel-tired wheels and the method of fastening them to the center, I would like to say a word. We have had some experiences with this method of fastening, and feel it is about the best which can be used, but on investigation of some of the cars under which we have steel-tired wheels, in which this method of fastening has been used, we have found detail fractures have started through the bolt hole wall on account of the lack of metal between the bolt hole and the inner diameter of the tire.

Referring to this illustration you will see that the dimension is $\frac{1}{8}$ in. If the workmen in the shop are not very careful in drilling out the 12 $\frac{3}{4}$ -in. holes through the tire, they may encroach upon that $\frac{1}{8}$ in. and you have no material between the bolt hole and the inner wall of the tire. I do not believe it would add anything at all to the weight of the wheel in arbitration to increase the $1\frac{1}{4}$ in. dimension to $1\frac{3}{8}$ in. and that would give $\frac{1}{4}$ in. of material between the edge of the bolt hole and

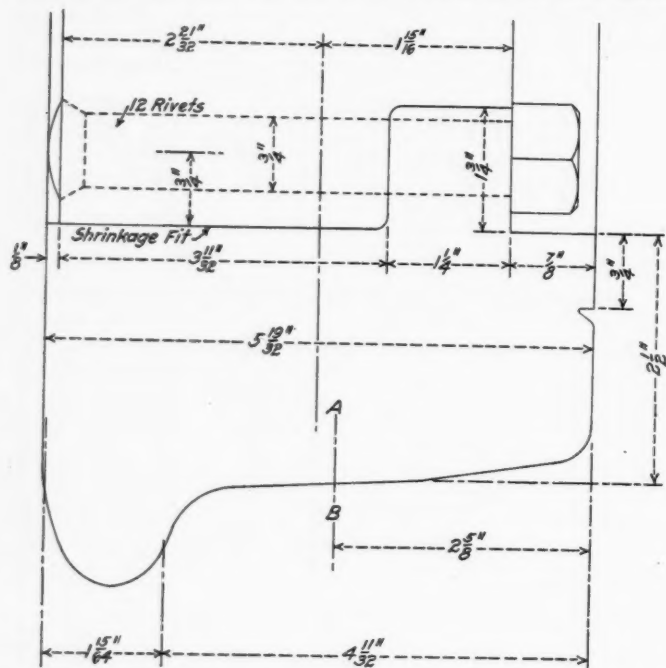


Fig. 8—Proposed Tire Fastening for Steel Tired Wheels.

number of tape size, or if the rejection is for low chill, the test will be continued in the next lower number tape size.

"In any shipment where the average weight of wheels is above the maximum weight of wheels the excess weight to be at the expense of the manufacturer.

"In case wheels ordered with cores smaller in diameter than the standard, the additional weight should be considered as an addition to the normal weight and paid for by the purchaser."

Recommendation No. 13.

It is recommended that the letters A B be added to the measuring line $2\frac{3}{8}$ in. from the outside rim of the wheel to the drawing of the 625-lb. cast-iron wheel M. C. B. Sheet N, of the 675-lb. cast-iron wheel M. C. B. Sheet O, and the 725-lb. cast-iron wheel M. C. B. Sheet P.

Recommendation No. 14.

It is recommended that the following clause be added to the Code of Rules for the Interchange of Traffic:

"Rule 76A. Height of flange.—If the height of flange is $1\frac{1}{2}$ in. or greater."

Recommendation No. 15.

It is recommended that the standard size of cores for cast-iron wheels be shown on the drawings of same as follows:

M. C. B. Sheet M Recommended Practice, for cast-iron wheels for 60,000-lb. cars. Add the following clause:

"Standard core $5\frac{1}{4}$ in. diameter."

M. C. B. Sheet O Recommended Practice, for cast-iron wheels for 80,000-lb. cars. Add the following clause:

"Standard core 6 in. in diameter."

M. C. B. Sheet P Recommended Practice, for cast-iron wheels for 100,000-lb. cars. Add the following clause:

"Standard core $6\frac{1}{2}$ in. in diameter."

The above notations to be placed under the dimensions of the finished bore.

The report is signed by:—Wm. Garstang (C. C. C. & St. L.), chairman; W. C. A. Henry (Penna.); A. F. Manchester (C. M. & St. P.); R. W. Burnett (C. P.); R. L. Ettenger (So. Ry.); O. C. Cromwell (B. & O.) and J. A. Pilcher (N. & W.).

APPENDIX.

An appendix follows showing a portion of what the American Society for Testing Materials has drawn up as proposed standard specifications for forged and rolled, forged, or rolled

the inner diameter. In view of the fact that we have had wheels fail, due to detail fractures starting in this location, I would like to offer Mr. Garstang the suggestion of increasing that dimension from $1\frac{1}{4}$ in. to $1\frac{3}{8}$ in.

Mr. Garstang: It is a matter of opinion and experience. If the sentiments of the members of the association are that this change should be made, we will be glad to make the change.

I. S. Downing (L. S. & M. S.): We had the same experience as referred to by Mr. Young with this style of wheel and we had one serious wreck on account of wheel failure, on account of the bolt holes being bored too close to the inside walls.

Mr. Garstang: I think one of the good features of this design is the amount of flat bearing surface that you have got between the center and the tire; that is, the tire largely depends on shrinking. The bolt that you put in is simply to hold the tire in case of the failure of the bearing. While it may be beneficial to increase that distance at that point, I cannot figure out how.

Mr. LaRue: I would like to ask the chairman of the wheel committee if he has heard any objection to the dropping of the contour of the throat of the wheel to $\frac{5}{16}$ -in. on the outside. I believe there has been some trouble under certain conditions. I would like to ask if anybody else has had any trouble in this respect?

Mr. Young: In answer to Mr. Garstang, the increase of that dimension will not affect in any way the bearing of the tire on the center. It merely affects the lug which is a part of the tire to which the retaining bolts are secured. If, in the drilling of these holes, any error takes place, we practically have a drilled hole at the inner wall of the tire which will start a detailed fracture through that bolt hole. We have had that experience.

The President: Are there any members who can answer Mr. LaRue in regard to trouble with the dropping of the contour of the wheel?

D. E. Fitzgerald (St. L. & S.): We have had two wrecks on our lines where the change in the contour has been advanced for the reason of the derailment on the theory that where the rails are a little wide gage, the sharp contour has a tendency to form a wedging motion, and that causes the flange on the other side to crowd and climb on the rail. That is particularly true of new cast wheels, where the flange is rough, and the flange is shallower than formerly, and I have also heard it advanced in the case of steel-tired wheels.

L. C. Ord (C. P.): I ask Mr. Young if he will explain just what trouble these detailed fractures caused. It should be borne in mind that the addition of metal to the tire to the $\frac{1}{4}$ -in. dimension, would mean an increase of metal which would have to be paid for on all tires in service, and would not be warranted unless the detailed fractures to which Mr. Young refers are relatively important. I cannot see how the fractures can occur if the tire is properly secured to the center. I would also ask if the error in drilling would mean an error on one hole or on all the holes in the center, as that is practically what would have to happen to appreciably weaken the fastening. I also cannot see how a detail fracture in the holes could occur unless the tire were loose and working on the center.

Mr. Young: Some of these failures which have come up from this cause, have been due to a thin wall there, detail fractures having taken place. Where the hole has been supported by sufficient material between the inner edge and the bolt hole, the detail fractures have not started. The driving fit of the bolt probably tends to spread that metal a little bit, it is only $\frac{3}{8}$ in. by $1\frac{1}{4}$ in., and you can see there is not very much strength there to hold up the driving fit of a bolt.

Mr. Garstang: In answer to the gentleman who has just spoken, I would say, that has the full backing up of the center, and it is supposed that that lug has the same shrinkage as the balance of the tire, and if it has, you practically have solid metal; and, personally, I do not believe it would make any difference if it was only $\frac{1}{16}$ in. thick at that point.

The President: Gentlemen, you have heard Mr. Hennessey's motion that the report of the standing committee on car wheels be received and the recommendations contained in the report submitted to letter ballot.

The motion was carried.

Telegraphic advices from Brussels announce the removal of the discrimination which has existed against American lubricating oils in connection with public tenders for supplies for the Belgian state railways. The specifications for supplies have in the past called for Russian oils, thus preventing American oils from competing. The action of the Belgian government follows representations on the subject of American lubricating oils made by the United States government.—*Consular Report.*

HONORARY AND ASSOCIATE M. C. B. MEMBERSHIP.

Harry Coulter, inspector of the Philadelphia, Baltimore & Washington, made application yesterday to become an honorary member of the M. C. B. Association. Mr. Coulter, having been a member since 1891, being a period of 21 years, is eligible to election to such membership, and the convention will vote on his application on Friday.

It will also ballot on Friday for the election, as an associate member, of Prof. Edward C. Schmidt, of the University of Illinois. Professor Schmidt made his application last year, and in accordance with the rules of the association action was deferred until this year.

TRANSPORTATION FOR RETURN RAILWAY TRIPS.

Through Secretary Taylor, the Pennsylvania has notified the railway members of the M. C. B. and M. M. associations wishing transportation home over the lines of the Pennsylvania Railroad or the Pennsylvania Lines West, that such transportation will be provided if they hand their names to Secretary Taylor. Owing to the requirements of the law, this transportation must be limited to bona fide railway officials, and cannot include members of belt lines, or car lines or switching roads operated by industries.

The Central of New Jersey offers the same courtesy to those members of the two associations who wish to return over the Central of New Jersey or the Reading. A special train of parlor cars for New York will leave Atlantic City at 2.30 o'clock on Wednesday afternoon, June 19.

"PAPA WILL NOT DANCE TO-NIGHT."

[In order that the following may not be taken by the censors of the conventions as historic verity, we hasten to explain that it is what the ex-poet laureate of the mechanical conventions imagined in Chicago would happen in Atlantic City as a result of the abolition of the grand balls, one of which, under the unexpurgated programme, would have occurred to-night.—Editor.]

Slowly Jersey's sun was setting (it sits 'round all day),
Making all the land an oven, hot enough to scorch marsh hay;

And its rays had raised some blisters on a man and maiden fair;

He was mopping off his forehead, she was fixing her back hair;

She with bowed head, sad and thoughtful; he with face serene and bright,

Struggling to keep back the gurgle, "Papa will not dance to-night."

"Papa," Bessie's white lips faltered, pointing to Young's new pier,

With its strings of incandescent, tinting wavelets far and near.

"There's a fellow on the Boardwalk, one who wants to waltz with me,

And there isn't any music; it's so tiresome, don't you see?"
Papa kept his features solemn, but his eyes grew strangely bright

As he murmured through his whiskers, "Papa will not dance to-night."

"Bessie," calmly spoke her papa—and his accents made her sad,

Though he had some little trouble not to show that he was glad—

"Every year until the present I've put on my evening togs,
Hung around till nearly daylight, like the bumps upon the logs;

I have done my duty reg'lar, tried to do just what was right,
But I tell you I am tickled; Papa will not dance to-night."

Mad her eyes and sad her features, red and freckled was her
nose,

But she said in self-communion, "Wonder why I brought my
clothes?"

She had read Joe Taylor's programme and had felt inclined
to scoff.

"At the present year's conventions neither grand ball will
come off,

And there won't be any music—(dough therefor is not in
sight);"

But she muttered through her ivories, "Bessie's going to
dance to-night."

Hied she to the Hotel Rudolf, rode up to an upper floor,
Decked herself in gorgeous raiment, though she knew her
dad was poor,

And their rooms were near the skyline; (this year Daddy paid
the shot,

And he couldn't stand the Marlborough—last year could as
well as not);

Then she rolloed down the Boardwalk, whispering in the
evening light—

"Curses on their stingy programme—Bessie's going to dance
to-night!"

She has reached the Marlborough-Blenheim, dodging through
the roller chairs,

Found a little crowd assembled standing round in groups
and pairs,

And the orchestra beginning—she had heard the strains
before—

But the old man ducked his coco and slid out another door.
Shall she follow him? Not any. Flashed her eyes with sud-
den light—

"Let him go and get real woozy! Bessie's going to dance
to-night!"

In she sailed and caught a partner. (It is possible he thought
He had asked her for the favor—but, no matter, he was
caught).

Then she waltzed and two-stepped gaily, while the old man,
down the hall,

Met a friend and guessed a high one was the grandest kind
of ball.

And they chuckled as they ordered—guessed the present plan
was right:

"Lets the old guys have a show in—papas do not dance to-
night."

It was o'er. The strings stopped playing and the maiden rode
once more

In a wheel chair up the Boardwalk (thought her pa had gone
before);

And she felt a glow of pleasure, notwithstanding weary feet,
That she'd had the dance she wanted and had managed it
so "neat,"

Notwithstanding the committee had determined to "run
light,"

And she murmured to her mirror, "Bessie had her dance
to-night."

In the early hours came Papa; thanks to roller chairs and
guide,

He had run the Boardwalk safely, nor fell off on either side;
Through the door Bess tells her story; asked how he'd
enjoyed his eve;

(Didn't know where he was going, though she thought she
saw him leave).

Papa chuckled a silly chuckle as he fumbled with the light,
And replied to Bessie's query, "Papa dijn't dansh t'night."

—F. W. LANE.

BALL GAME RESULTS IN PAST YEARS.

This will be the tenth year in which the ball game has
been an annual feature of the conventions. The games in
1908 and 1909 were between the railway men and the supply
men, and in the former the supply men won, 25 to 19; in the
latter, the railway men, 14 to 12. In all the other years the
battles have been between East and West, and the following
have been the scores:

	East.	West.
1903	11	5
1904	7	11
1905	18	17
1906	7	17
1907	1	23
1910	15	0
1911	15	1

It will be seen that the East has won four times and the
West three times in the seven years. The only year when
the score was close was 1905, when it was 18 to 17.

NORFOLK & WESTERN STEEL CAR ORDER.

The Norfolk & Western has ordered 10 steel postal, 8
combination baggage and mail and 6 combination baggage
and express cars from the Pressed Steel Car Company, Pitts-
burgh, Pa., and 35 steel coaches and 5 combination passenger
and baggage cars from the Harlan & Hollingsworth Cor-
poration, Wilmington, Del. This is the first order for all-
steel cars ever placed by the Norfolk & Western.

MAJOR SYMINGTON.

Major W. Stuart Symington, father of the "Symington
boys" so well known to many of us here at Atlantic City,
died suddenly early on Sunday evening. He had been play-
ing golf and was on his way from the Elkridge Kennels to
his home in Baltimore when he was stricken with apoplexy.

Major Symington was 73 years old, but carried his years
lightly. To his seven sons he was more like an elder brother.
He enjoyed nothing better than attending these annual con-
ventions and keeping in touch with the friends of associates
of his sons.

The following editorial, from *The Sun*, of Baltimore,
headed "The Loss of a Man," is a fitting tribute to Major
Symington:

"Each era has its special pattern and fashion in the matter
of gentlemen, and, though we have made great progress in
most directions, we cannot but feel, when we record the
death of such a man as Major W. Stuart Symington, that the
old pattern and fashion was one of peculiar beauty and
nobility, and one which with unfeigned regret we see van-
ishing forever. Major Symington was one of the last of the
splendid type of a former generation of Marylanders who
combined the outward courtliness and consideration of a
more gracious and graceful period with the brave and gen-
erous qualities that appeal to the heart and the imagination
in every age. It was a rare creation, whose roots went back
to an even older civilization than its own, and drew heroic
inspiration from a day of knightly ideals and traditions. It
was men of this kind, intense, unswerving, unchanging in
their loyalty, in their convictions, in their devotion to a
cause or principle once espoused, that made splendid the
pages of English history and fiction; it was men of the same
uncompromising kind that made the Maryland Line famous
in the Revolution; it was men like him who put Maryland

again in the front rank of battle during the Civil War and made Gettysburg a glorious disaster to the Confederacy. We bid these survivors of a day that is dead farewell with genuine regret as they pass away, one by one, and cherish the hope that if we of this generation cannot be altogether as they were, we may not lose entirely the inward grace that made them so kindly and attractive, nor the burning zeal and undoubting faith that sometimes made even their errors seem better than other men's cold-blooded truths.

"Major Symington was a good citizen as well as a brave soldier and a true gentleman. He was loved, respected and admired even by those who differed from him radically on every subject, and his passing is a loss not only to his associates and friends, but to the city and State, which is poorer by the death of one true man than by the destruction of much material treasure."

INVITATION TO MASTER STEAM AND HOT WATER FITTERS' ASSOCIATION.

The Master Steam and Hot Water Fitters' Association of the United States held their convention yesterday at Atlantic City. A special invitation to attend the convention and partake of all the privileges of the pier was extended to the association by the Railway Supply Manufacturers' Association.

THE DANCE LAST NIGHT.

The social gathering in the Blenheim exchange last evening was followed by an informal dance in the solarium. It was the evening on which the reception to officers of the M. C. B. Association and their wives has been given in past years, and the number participating in the dancing was about as large as on the evening of the first day of the conventions in past years.

MRS. FULLER SERIOUSLY ILL.

The following letter from C. E. Fuller, assistant general manager of the Union Pacific, second vice-president of the Master Car Builders' Association, and past president of the Master Mechanics' Association, was read at the opening session of the M. C. B. Association yesterday:

AT CHICAGO, June 9, 1912.

My Dear Mr. Stewart:

Owing to the serious illness of Mrs. Fuller, who is now in the Michael Reese Hospital at Chicago, I feel my first duty is to her, which will prevent my attending and taking part in the meeting of the M. C. B. Association at Atlantic City this year. Will you please explain to the members of the association the reason for my non-attendance.

Wishing for the association one of the best meetings it has ever had, I remain,

Yours very truly,

C. E. FULLER.

The association, by unanimous vote, extended its sympathy to Mr. Fuller.

Mr. Fuller will be seriously missed from the meeting this year, and the DAILY unites with Mr. Fuller's many friends in wishing Mrs. Fuller a speedy and thorough recovery.

The railway from Hangchow, China, to Ningpo, will be 120 miles long and will have a gage of 4 ft. 8½ in. The concession was granted to a British and Chinese corporation. Construction work was started at Ningpo, but had to be abandoned on account of financial difficulties.

M. C. B. REGISTRATION.

Acker, Chas. L., Toledo Terminal, Lexington.
 Alter, William, Central R. R. of N. J., Edison.
 Andrews, S. B., Seaboard Air Line Ry., Dennis.
 Anthony, F. S., Texas & Pacific, Traymore.
 Arp, W. C., Vandalia, Marlborough-Blenheim.
 Ayers, A. R., N. Y. C., Lines West, Marlborough-Blenheim.
 Barnes, P. H., Balto. & Ohio R. R., Pennhurst.
 Barrett, R. W., Norfolk & Southern Ry., Arlington.
 Bartlett, Henry, Boston & Maine R. R., Brighton.
 Beaghen, Thos., Union Tank Line, Chelsea.
 Beattie, J. A., McKeesport Connecting R. R., Seaside.
 Beaumont, H. A., B. & O. R. R., Young's.
 Bentley, W. F., B. & O. R. R., Shelburne.
 Billinham, R. A., Pittsburgh, Shaw & Nor. R. R., Lexington.
 Bottomly, Edw. S., Lexington.
 Brandt, C. A., C. C. C. & St. L. Ry., Marlborough-Blenheim.
 Brown, M. G., Gulf & Ship Island R. R., Haddon Hall.
 Bundy, C. L., D. L. & W. R. R., Lexington.
 Burch, J. J., N. & W., Seaside.
 Callahan, J. P., E. J. & E., Edison.
 Carmer, J. R., P. B. & W. R. R., Haddon Hall.
 Carr, W. K., Norfolk & Western Ry., Dennis.
 Carroll, J. T., Baltimore & Ohio R. R., Marlborough-Blenheim.
 Carson, G. E., N. Y. C. & H. R. R. R., Traymore.
 Case, S. T., N. Y. C. & H. R. R. R., Pennhurst.
 Chaffee, F. W., N. Y. C. & H. R. R. R., Dennis.
 Chambers, C. E., Cent. R. R. of N. J., Dennis.
 Chambers, J. S., Coast Line R. R., Marlborough-Blenheim.
 Clark, F. H., B. & O. R. R., B. & O. S. W. R. R., Marlborough-Blenheim.
 Clark, J. H., Staten Is. Rapid Transit Ry., Marlborough-Blenheim.
 Clark, J. J., Tennessee Central R. R.
 Cleaver, F. C., Rutland R. R., Marlborough-Blenheim.
 Contant, M. R., Ulster & Defa. R. R., Shelburne.
 Cook, G. R., Penna. Lines West, Brighton.
 Courson, J. F., Brighton.
 Craig, Andrew, B. & M. R. R., Young's.
 Craig, James, B. & M. R. R., Young's.
 Cromwell, O. C., B. & O. R. R., Marlborough-Blenheim.
 Curran, J. W., B. & O. S. W. & C. H. & D., Haddon Hall.
 Davis, Geo. G., C. C. C. & St. L. Ry., Dunlop.
 Davis, Jas., Penna. R. R., Chalfonte.
 Davis, M. J., Penna. R. R., Chalfonte.
 Demarest, H. N., Penna. R. R., Young's.
 Dickerson, S. K., L. S. & M. S. Ry., Marlborough-Blenheim.
 Dickinson, F. W., Bessemer & Lake Erie R. R., Monticello.
 Eberle, Wm. F., Penna. R. R., Chalfonte.
 Eell, E., Norris & Co., Chalfonte.
 Elmer, Wm., Penna. R. R. (B. & A. V. Div.), Chalfonte.
 England, Robt. H., Central Ry. of Oregon, Marlborough-Blenheim.
 Ettinger, R. L., Southern Ry. Co., Dennis.
 Fitzgerald, D. E., St. Louis & San Francisco, Haddon Hall.
 Fowler, G. L., Dennis.
 Friese, N. L., Norfolk & West Ry., Seaside.
 Fritts, J. C., Dela. Lack. & Western R. R. Co., Traymore.
 Fryer, C. V., N. Y. O. & W. R. R., Traymore.
 Garstang, Wm., C. C. C. & St. L. Ry., Marlborough-Blenheim.
 Goodnow, T. H., Armour Car Lines, Marlborough-Blenheim.
 Graburn, A. L., Can. Northern Ry., Traymore.
 Graham, Chas. E., Central R. R. of Oregon, Marlborough-Blenheim.
 Gray, B. H., Orleans, Mobile & Chicago, St. Charles.
 Hainen, J., Southern Ry., Dennis.
 Hall, W. H., C. R. R. of N. J., Hotel Arlington.
 Hamilton, Tabor, Cumberland Valley R. R., Chalfonte.
 Harris Wells, N. Y. N. H. & H. R. R., Chester Inn.
 Hartman, F. B., Southern Ry., Arlington.
 Hayes, A. C., New York Central Lines, Pennhurst.
 Henry, W. C. A., Penna. Lines West, Dennis.
 Horrigan, John, Elgin, Joliet & Eastern Ry., Traymore.
 Jackson, O. S., Chicago, Terre Haute & Southwestern Ry., Young's.
 James, J. M., Penna. R. R. (West Penna. Div.), Marlborough-Blenheim.
 Justus, I. J., St. J. C. & H. R. R. R., Pennhurst.
 Kantmann, A. G., Nashville, Chattanooga & St. Louis, Runnymede.
 Keary, C. O., Penna. R. R., Haddon Hall.
 Kent, F. S., Penna. R. R., Marlborough-Blenheim.
 Kiessel, W. F., Penna. R. R., Chelsea.
 King, A., N. Y. O. & W. R. R., Lexington.
 Kleine, R. L., Penna. R. R., Dennis.
 Kneass, S. T., Wm. Sellers & Co., Chalfonte.
 Knight, W. E., Cuba R. R., Traymore.

La Rue, H., C. R. I. & P. Ry., Traymore.
 Lewis, W. H., Norfolk & Western Ry., Marlborough-Blenheim.
 Lovell, Alfred, Traymore.
 Lynn, Samuel, P. & L. E. R. R. Pennhurst.
 MacBain, D. R., L. S. & M. S. Ry., Marlborough-Blenheim.
 Marden, J. W., Shelburne.
 Malott, F. W., Northern Pacific Ry., Chalfonte.
 McCully, B. N., N. Y. Philada & Norfolk Ry., Haddon Hall.
 McElvaine, C. L., Penna. R. R. Co., Brighton.
 McKinsey, C. R., Phila. Balt. & Wash. Ry., Runnymede.
 McNulty, F. M., Monongahela Connecting R. R., Chalfonte.
 Mercur, R. E., Westmoreland Coal Co., Traymore.
 Millar, E. T., B. & M. R. R., Young's.
 Miller, E. A., N. Y. C. & St. L. R. R., Traymore.
 Miller, E. B., B. & O. R. R., Baltimore House.
 Miller, Wm., Erie R. R., Chester Inn.
 Milliken, Jas., Phila. Balt. & Ohio Ry., Brighton.
 Milton, J. H., Chicago Terminal C. R. I. & P., Rudolf.
 Minick, Eli, Lehigh Valley R. R., 12 Michigan Ave.
 Mirtz, P. P., L. S. & M. S. Ry., Traymore.
 Moore, B. R., Duluth & Iron Range R. R., Traymore.
 Morse, C. S., Wheeling & Lake Erie R. R., Traymore.
 Munroe, J. T., Erie R. R., Chester Inn.
 New, W. E., Kansas City Terminal Ry.
 O'Brien, J. J., St. Louis Merchants Bridge Term. Ry., Watkins.
 O'Donnell, T. J., N. Y. Car Shops, Pennhurst.
 Onderdonk, J. R., B. & O. R. R., Marlborough-Blenheim.
 Ord, L. C., Canadian Pacific Ry., Arlington.
 Perine, D. M., Penna. R. R. (New Jersey Div.), Traymore.
 Pfafflin, Louis, Indianapolis Union Ry., Biscayne.
 Phillips, C., N. O. & N. E. R. R., V. S. & P. Ry., Brighton.
 Pilcher, John A., Norfolk & Western Ry., Brighton.
 Poole, A. J., Seaboard Air Line Ry., Marlborough-Blenheim.
 Putnam, C. H., Atlanta & Birmingham & Atlantic Ry., Young's.
 Rande, H. G., Newburgh & South Shore Ry., Monticello.
 Rasbridge, R. B., Philada. & Reading Ry., Dennis.
 Richards, C. F., Lehigh & Hudson.
 Riddell, J. C., Marietta, Columbus & Cleveland R. R., Iroquois.
 Rink, Geo. W., Cent. R. R. of N. J., Dennis.
 Robider, W. J., Central of Georgia Ry., Chelsea.
 Robins, S. P., Can. Pacific Ry., Pennhurst.
 Roope, Thos., Chg. Bur. & Quincy Ry. (West), Traymore.
 Ross, D. C., Mich. Central R. R., Brighton.
 Rourke, W. H., Pere Marquette R. R., Lexington.
 Rumney, T., Chicago, Rock Island & Pac. Ry., Brighton.
 Schmidt, E. C., Univ. of Ill., Haddon Hall.
 Schmoll, G. A., Balto. & Ohio R. R., Traymore.
 Schrader, J. R., N. Y. C. & H. R. R. R., Young's.
 Seifert S. P., Norfolk & Western.
 Senger, J. W., Lake Shore & Mich. S. Ry., Lexington.
 Sheafe, J. S., Illinois Central R. R., Traymore.
 Sisco, G. E., Southwest System, Penna., Haddon Hall.
 Smart, G. E., Can. Pac. Ry., Arlington.
 Smith, P. F., Penna. Lines (Central System), Brighton.
 Staley, H. F., Caro, Clinchfield & Ohio Ry., Traymore.
 Stark, James L., Hocking Valley R. R., Young's.
 Sternberg, Adam S., Wabash R. R., Haddon Hall.
 Sullivan, J. J., L. & N. R. R., Dunlop.
 Summer, Eliot, Nor. Cent. R. R., Chalfonte.
 Symons, W. E., Traymore.
 Tatum, John J., B. & O. R. R. Co., Chelsea.
 Thomas, H. T., Detroit & Mackinac Ry., Pennhurst.
 Thomas, I. B., Penna. R. R., Chalfonte.
 Thomas, J. J., Jr., M. & O. R. R. and Southern Ry. in Miss., Shelburne.
 Thomas, N. H., Dennis.
 Thomson, Samuel G., Phila. & Reading R. R., Lennox Apt.
 Tonge, John, M. & St. L., Chalfonte.
 Trimyer, H. L., Seaboard Air Line Ry., Marlborough-Blenheim.
 Tritsch, C. M., Western Maryland R. R., Brighton.
 Van Buskirk, H. C., Colorado & Southern Ry., Chalfonte.
 Vaughn, H. H., Canadian Pacific Ry. Co., Marlborough-Blenheim.
 Vittum, J. E., Arlington.
 Wahlen, John, Montpelier & Wells River R. R., Lexington.
 Waughop, Chas., Young's.
 Wilson, Jas. W., Newberry Junction, Pa., Monticello.
 Wyman, R. L., Lehigh & New England R. R., Pennhurst.
 Yergy, J. P., Penna. R. R. Co., Chalfonte.
 Young, Chas. D., Penna. R. R., Brighton.
 Young, J. P., Mo. Pacific Ry., Dunlop.
 Zweibel, C. A., Atlantic Coast Line R. R., Lexington.

M. C. B. GUESTS.

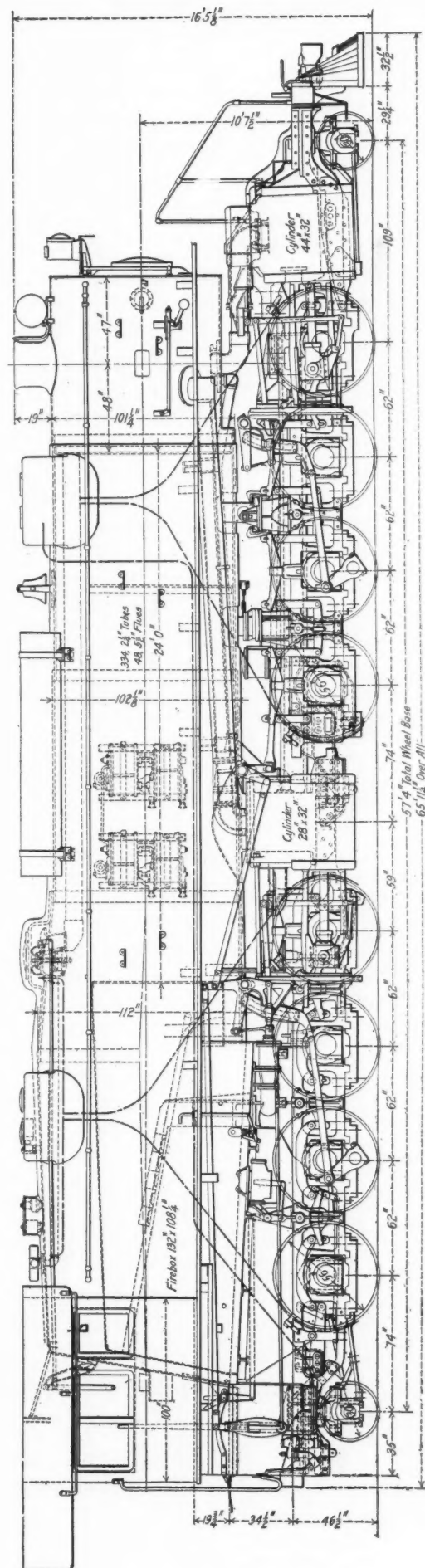
Abbott, A. S., Frisco, Haddon Hall.
 Acker, J. J., C. R. I. & P., Lexington.

Alquist, P., Pere Marquette, Lexington.
 Altvater, Chas. P., Penna. R. R., Elberon.
 Arnold, A. E., N. Y. Central, Lexington.
 Atkinson, C. R., Stenographer Gen. Supt. M. P., Penna. R. R., Russell.
 Baker, C. N., P. R. R.
 Baley, W. W., N. Y. O. & W., Lexington.
 Barba, C. E., P. R. R., Seaside.
 Barrett, C. D., P. R. R.
 Barry, Frank J., N. Y. O. & W. Ry., Lexington.
 Bartram, S. L., N. Y. C., Roseda Apt.
 Barwis, C. W., Penna. R. R., Princess.
 Barwis, J. McC., Penna. R. R., LaBelle Inn.
 Beamer, J. A., P. R. R., Chalfonte.
 Berg, J. V., L. S. & M. S., Pennhurst.
 Berry, A. O., Lake Erie & Western, Lexington.
 Beyer, O. S. Jr., Rock Island Lines.
 Beynes, Anton, J. J. Beynes Ry. Car Builders, Young's.
 Blair, H. A., B. & O., Chetwoode.
 Borell, Elmer A., Head Car Draftsman, Phila. & Reading Ry. Co., Albemarle.
 Boring, T. J., Penna., Dennis.
 Brubaker, H. H., Penna. R. R., Chalfonte.
 Bunnell, F. O., Rock Island Lines, Chelsea.
 Burns, R. C., P. R. R., Haddon Hall.
 Busse, F. W., B. & O., Strand.
 Butler, W. S., Ches. & Ohio R. R., Haddon Hall.
 Byron, H. W., Penna. R. R., Chalfonte.
 Cadwell, Dr. N. W., Atlantic City.
 Carter, B. D., Virginian Ry., 2022 Pacific Ave.
 Coates, H. T. Jr., Penna. R. R., Chalfonte.
 Conlin, J., Marlborough-Blenheim.
 Conner, J. F., Wash. Ter. Co.
 Connors, J. M., Jr., B. & O., Chetwoode.
 Cook, E. F., Union Tank Line, Chelsea.
 Coulter, A. F., Union R. R., Channell.
 Cromwell, E. G., B. & O., Pennhurst.
 Davis, Jas. C., National Tube Co., Seaside.
 Davis, W. H., N. Y. O. & W., Chalfonte.
 Demarest, T. W., Penna. Lines, Brighton.
 Derick, C. T., P. R. R., Iroquois.
 Dildine, J. A., Penna. R. R., Dennis.
 Donovan, A. G., Mgr., So. Western Mech. Co., Craig Hall.
 Drawbaugh, E. L., Cumberland Valley R. R., Chalfonte.
 Dyer, D. H., Norfolk & Western.
 Effinger, W. P., Erie R. R., Melrose.
 Egbers, J. F., Northern Pacific, Chalfonte.
 Emory, J. B., M. M., Texarkana & Ft. Smith R. R., State Villa.
 Ensign, J. T., Chief Insp. R. R. Dept., Interstate Commerce Co., Monticello.
 Eppley, G. A., United Rwy. & Elec. Co., Isleworth.
 Felton, H. E., Union Tank Line, Chelsea.
 Finnegan, F. L., Chief Clerk, Ivanhoe & Carroll, Dunlop.
 Fisher, W. J., Frisco, Haddon Hall.
 Fitzsimmons, E. S., Erie, Chalfonte.
 Fordney, Phillip, P. R. R.
 Garcelou, H. I., B. & O., Chalfonte.
 Gardner, G. C., Jr., Gen. Foreman of M. P., Penna., Marlborough-Blenheim.
 Gilmore, W. A., B. & O., The Baltimore.
 Ginder, Vivian, Soliciting Agent, Central States Dispatch, Young's.
 Gray, C. B., Gen. For., P. R. R., Dennis.
 Gruver, J. F., P. R. R.
 Hafner, A. H., P. R. R., Seaside.
 Hair, John, Special Inspector, B. & O. R. R., DeVille.
 Hale, H. H., B. & O., S. W. & C., H. & D. R. R., Haddon Hall.
 Hale, Ross H., B. & O., S. W. & C., H. & D. R. R., Haddon Hall.
 Harris, C. M., Washington Terminal Co., Traymore.
 Hauser, Percy, Draftsman M. E. Office, P. R. R., Young's.
 Heiser, W. F., C. & E. I., Strand.
 Hessenbruch, T., P. & R., Haddon Hall.
 Hill, Rufus, Penna. R. R.
 Hippey, E. S., P. R. R., Iroquois.
 Hodges, H. A., Long Island Ry., Shelbourne.
 Holzner, J. F., K. & M., Haddon Hall.
 Hull, D. K., General Foreman, B. & O.
 Jenny, J., For. Car Repairs, Penna. R. R., Ellwood.
 Kapp, J. B., Asst. M. M., P. R. R., Chatham.
 Keller, J. W., P. R. R.
 Kelley, O. J., B. & O. R. R., New Berkley.
 Kellogg, D. R., Haddon Hall.
 Kilpatrick, J. B., Chic., R. I. & Pacific, Traymore.
 Klingensmith, W. H., Foreman Blacksmith Shop, Penna. R. R., Ellwood.
 Koch, Geo. B., For. Test Dept., P. R. R., Traymore.
 Kraber, Luther B., P. R. R.

Kuhn, W. T., T. H. & B., Young's.
 Kuier, H. G., P. R. R.
 Lee, F. H., B. & O., Chetwoode.
 Lide, C. D., Carolina & North West R. R.
 Lindsay, Samuel M., P. R. R.
 Lucord, F. M., Am. R. R. Assoc., Dennis.
 Mallory, C. E., Kingan Refrigerator Line, Traymore.
 May, Walter, C. C. & St. L. R. R., Chalfonte.
 Maupin, J. D., Trinity Brazas Valley R. R., Lexington.
 McArthur, F. A., Frisco, Haddon Hall.
 McDonald, Geo., C. R. I. & P. Ry., Lexington.
 Merriman, M., Ch. Clk. S. M. P., Western Maryland R. R., Brighton.
 Mervine, I. B., M. P. Clerk, P. R. R., Traymore.
 Mullinix, S. W., C. R. I. & P. R. R., Dennis.
 Munson, Chas., C. R. & I. C., Shelburne.
 Murray, John D., General Manager, Cloustrmas Island R. R., Chalfonte.
 Neff, W. P., Car Insp., Penna. Ry., Bothwell.
 New, Fred, Kansas City Terminal.
 Norris, J. C., Cumberland Valley R. R., Chalfonte.
 Orr, Wm. G., P. R. R., Dunlop.
 Parker, Dr. Walter E., Michigan Central, Marlborough Blenheim.
 Payne, H. R., Union Tank Line, Young's.
 Perrine, W. M., C. of Jersey, Pennhurst.
 Phillips, C. C., Brighton.
 Posten, D. W., P. R. R., Iroquois.
 Prentice, W. H., P. C. C. & St. L. Ry., Star Cottage.
 Reiley, Thos. E., Penna. R. R. Co., Chelsea.
 Renner, C. W., P. R. R., Chalfonte.
 Reynolds, O. H., Pennhurst.
 Rhine, Geo. B., Foreman, Penna. R. R., Biscayne.
 Rice, Edmund, Chief Clerk to Pur. Agent, Boston & Albany, Shelburne.
 Rickard, E. S., Dist. Car Inspector, Rock Island, The Tracy.
 Robb, J. W., Cudahy Packing Co., Dennis.
 Robinson, G. P., U. S. Assistant Ch. Insp., Loco. Boilers, Absecon.
 Rowland, E. T., P. R. R.
 Sagsletter, W. H., M. M., Kansas City, Southern, Shelburne.
 Schuyler, A. J., Virginian Ry.
 Sheen, John, A. & W. P. & W., Lexington.
 Sindall, G. E. M., P. R. R., Westminster.
 Singleton, C. W., Penna. R. R., Radnor.
 Smith, A. E., Union Tank Line, Chelsea.
 Smith, E. W., P. R. R., The Princess.
 Smith, J. A. B., U. S. Navy, 106 N. Vermont Ave.
 Stanton, E., Norfolk & Portsmouth Belt Line, 2022 Pacific Ave.
 Stewart, A. F., Traymore.
 Stoll, W. J., L. S. & M. S., Pennhurst.
 Strattan, R. T., P. R. R., Seaside.
 Sweeley, E. H., Long Island, Shelburne.
 Taylor, F. C., West Jersey & Seashore R. R., Bothwell.
 Thomas, W. H., Dennis.
 Trace, A. A., Chief M. C. B. Clerk, Erie R. R., Colwyn.
 VanBlarcum, C. B., B. & O., Eberon.
 Van Blunt, Geo. E., Penna. R. R., Iroquois.
 Vaught, Harry D., Marlborough-Blenheim.
 Walker, Tuttle C., Evening Union, Penna. & Bdwk.
 Walsh, Charles E., West. Ch. Clerk, Pur. Agt., Penna Lines, Haddon Hall.
 Warnoch, H. R., Monongahela R. R., Francis.
 Wilt, W. L., Penna. Co., Dennis.

MOST POWERFUL LOCOMOTIVE IN THE WORLD.

A locomotive with a firebox large enough to easily admit a 6 in. x 10 in. four wheeled tank locomotive, as is shown in the accompanying illustration is impressive even in these days of record breaking machines of all kinds. The boiler shown is one of four built by the American Locomotive Company and applied to Mallet locomotives of the 2-8-8-2 type for the Virginian Railway. This boiler measures 100 in. in diameter at the front end and 112 in. at the connection with the firebox. The area of the firebox inside of the sheets at the mud ring is 108 in. x 173 in. This however is not all grate area as the Gaines type of combustion chamber has been applied. The firebox including the combustion chamber, has a total heating surface of 410 sq. ft. The tubes are 24 ft. long and give a heating surface of 6,350 sq. ft., making a total evaporative surface of 6,760 sq.



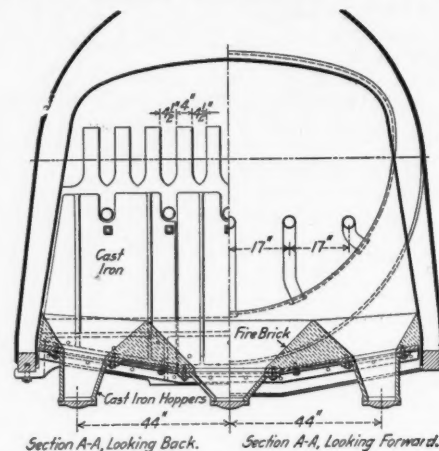
Most Powerful Locomotive in the World; Designed for Pusher Service on the Virginian; Maximum Tractive Effort, Compound, 115,000 Lbs.; Simple, 138,000 Lbs.

ft., or more than any other locomotive ever built. When it is further considered that a Schmidt superheater has 1,310 sq. ft., the comparative size of the boiler can be fully appreciated. The actual grate area is 99 sq. ft.

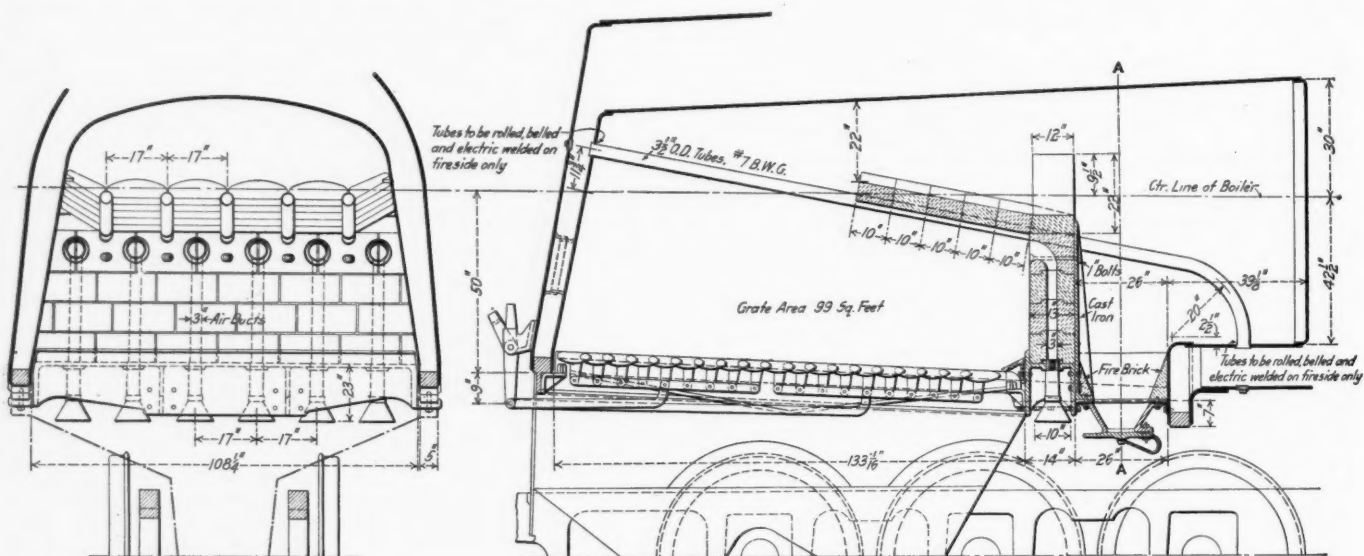
The boiler is not the only impressive feature of this locomotive. As will be seen by reference to the general elevation, the height from the rail to the top of the stack is 16 ft. 5½ in., the low pressure cylinders are 44 in. in diameter and the maximum width over cylinders is 144 in., all of which are larger than the measurements of the same points on any other locomotive.

These locomotives have been built for pusher service on a 2.07 per cent. grade between Elmore and Clarks Gap, West Virginia, a distance of 14 miles. Two of them as pushers with one of the older Mallets leading, are expected to allow an increase in train tonnage from 3,340 to 4,230 tons. The former tonnage is now obtained by using a Mallet road engine with two larger Mallets pushing and is the maximum that can be taken over this grade. The remainder of the division is such that a tonnage of 4,230 tons can be carried by the older type of Mallet road engines.

tions. This is a combination of a Gaines fire brick wall with a Security brick arch supported by tubes which curve and



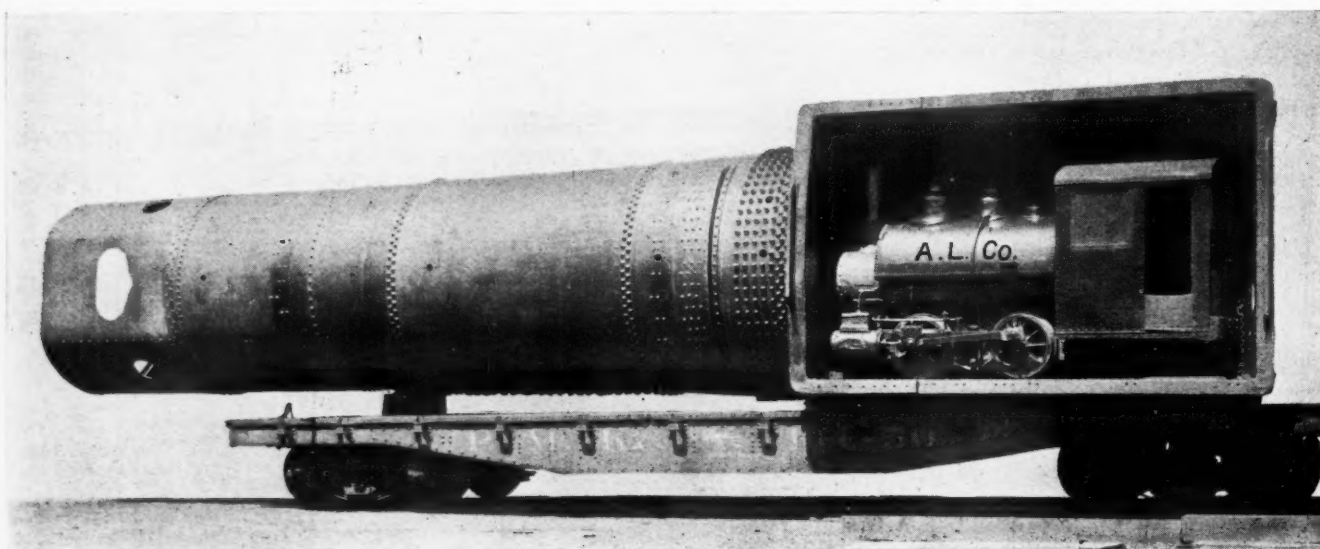
Section of Firebox Showing Mixing Fingers on Top of Fire Brick Wall.



Firebox of Virginian Mallets Showing Combination of Gaines Fire Brick Wall with a Security Brick Arch.

In addition to the size of the locomotives, the point of the greatest interest is probably found in the firebox arrangement which is clearly shown in one of the illustra-

enter the bottom of the combustion chamber. Mixing fingers are formed as an extension of the top of the fire brick wall and form a further aid to combustion beside tending



Largest Locomotive Boiler; Built by the American Locomotive Company for the Virginian Railway.

to force the flame up against the crown sheet at this point.

Vanadium steel has been extensively used for those parts subjected to the greatest strain. This includes frames, crossheads, tires, springs, main driving axles, main crank pins and piston spiders. The cylinders and valve chamber bushings are constructed of Vanadium cast iron. Some of the more important dimensions are given in the following table:—

Tractive effort, compound.....	115,000 lbs.
Tractive effort, simple.....	138,000 lbs.
Weight in working order (estimated).....	540,000 lbs.
Weight on drivers (estimated).....	479,200 lbs.
Diameter of driving wheels.....	56 in.
Steam pressure.....	200 lbs.
Tubes, number and outside diameter.....	334—2¼ in.
Flues, number and outside diameter.....	48—5½ in.
Tender, water capacity.....	12,000 gal.
Tender, coal capacity.....	15 ton.

FOREIGN RAILWAY NOTES.

The Peking-Hankow Railway, the northern section of the great trunk line north and south through China, in which American interests were once involved and which represents the most important railway element in the country, has been in operation for about five years. All authorities seem to agree that, though it reports a profit of about \$1,680,000 per year, it is deteriorating very rapidly in physical upkeep. The Chinese railway authorities claim that this deterioration is due largely to the fact that the foreign interests which formerly owned it knew it was to be transferred to the Chinese and neglected it, with the result that now its upkeep is more difficult and expensive than it should be. The railway's accounts do not show a proper allowance for deterioration, and the showing of a profit is more or less a matter of unscientific bookkeeping, the impairment of the railway plant resulting, in fact, in dividends being paid from the railway's capital. The general opinion is that a financial reorganization will be necessary to put the railway upon a safe and satisfactory basis. That this reorganization is coming seems beyond doubt and is only a matter of time. It is almost certain to lead to very important developments in the reorganization of railways in this portion of China generally, and will have a marked influence upon the course of Chinese railroading for years to come.

A notable feature of the railway situation in China is the comparatively rapid development of the desire for railways tributary to the lines already constructed; that is, an appreciation of the need, in the development of local industries, of close and convenient connections with the trunk systems. This is particularly noticeable along the coast above the Yangtze river, where a number of Chinese cities have shown a desire to secure connections with the Pukow railway and the Peking-Hankow railway, and between these railways and the Grand Canal. Several cities, notably Chinkiang, are commencing to appreciate the fact that they must have railway connections at once or their present position in the trade of the country will be lost. Local industries, like the salt industry in Kiangsu province and various mines in portions of the country to the north, are demanding and are gradually securing railway facilities. A number of these small lines are projected for connecting the existing lines and for serving them with many branches and connections. Among the new enterprises are the projected lines to connect the Tientsin-Pukow system with the Grand Canal, and cross lines at the Shantung-Kiangsu border from Lintscheng to Taierchuang to take the place of the projected Hantschuan-Ihsien line; the Kaomi-Ichow line to connect the German neutral territory with southern Shantung; and the Kaifong-Haichow line, furnishing an outlet at the seaboard for the east and west line through Honan and projected all the way to the Russian border.

Conventionalities.

Someone has suggested that "interstatecommercecommissionized" should be Fletcherized.

Lost—One Bureau of Information. Finder will please return to the president of the Railway Supply Manufacturers' Association.

D. F. Crawford, general superintendent motive power of the Pennsylvania Lines West, had to leave Atlantic City Tuesday morning for an inspection trip. He expects to return on Sunday.

F. W. Brazier, superintendent of rolling stock of the New York Central & Hudson River, has just returned from an inspection trip over the system. He was one of the first to arrive Tuesday.

Robert P. Lamont, president of the American Steel Foundries, registered at the Marlborough-Blenheim, Wednesday morning, and attended the opening exercises of the M. C. B. convention.

Joseph Bromley and A. F. Duffey, inspectors of the Interstate Commerce Commission, are in attendance at the convention and have spent considerable time in looking over the exhibits.

M. K. Barnum, general superintendent of motor power of the Illinois Central, expects a record of 60 heavy repairs to locomotives on the system this month. He came down on the special from Chicago Tuesday.

Postlethwaite hadn't been on the pier five minutes before he got into a dispute, the reason for which was not clear to on-lookers. It is suspected that Wilkinson, who stood close by, was in some way concerned.

The work assigned to the Bureau of Information has been turned over to the Enrollment Committee. Those who seek information concerning convention affairs will be accommodated at the office of the enrollment committee.

Edward B. Leigh, president, and Arthur Wyman, assistant to the president of the Chicago Railway Equipment Company, lost no time after their arrival Tuesday afternoon on the Pennsylvania special in greeting those already on the ground.

H. M. Estabrook was elected president of the Barney & Smith Car Company last week, in place of A. M. Kittridge, who resigned on April 17. Mr. Estabrook entered the employ of the company as a clerk, less than 27 years ago.

Harry U. Morton, vice president of the General Railway Supply Company, and Harry H. Schroyer, president of the Acme Supply Company, arrived from Chicago via New York on Tuesday. They will make the Strand their headquarters.

At the time of going to press A. J. Stevens, who was last week elected vice-president and general manager of the Barney & Smith Car Company, was expected to reach Atlantic City this morning. He will stop at the Marlborough-Blenheim.

Mrs. W. H. Coyle, wife of the assistant to the vice-president of the Franklin Railway Supply Company, spent Saturday and Sunday at Atlantic City, returning to New York on Monday. She will return at the end of the week and remain during the Master Mechanics' Convention.

Mr. and Mrs. Albert C. Ashton and Mother Ashton are staying at the Marlborough-Blenheim. This is the first time in five years that these two members of Mr. Ashton's family have been here with him. Mother Ashton has been coming to these conventions on and off for the last 33 years.

T. Dunbar had a bag of pretzels thrown in his lap on the Boardwalk by some mysterious person on which was the

message, "Feed these to the chickens." Being at a loss as to what particular breed relishes that kind of food, he desires to consult with some of the Boardwalk fanciers present.

R. B. Kendig, general mechanical engineer of the New York Central & Hudson River, was a little late in reaching Atlantic City because of the arrival of a 10 lb. boy about a week ago. This is No. 5, and the second boy. The youngster is said to resemble his mother.

Odds on Saturday's ball game have been sidetracked by the betting on a game of golf scheduled for Friday. E. H. Bankard and D. F. Mallory are to play J. L. Replogle and E. H. Bankard, Jr. The odds favor Bankard, Sr., and Mallory; but, judging from certain "inside information," somebody's going to get fooled.

D. F. Crawford, general superintendent of motive power of the Pennsylvania Lines West of Pittsburgh, arrived Tuesday. He is enthusiastic about the results which are being obtained from the use of the mechanical stoker on his road, 75 of which are now in service. In a recent test one of these stokers on a Pacific type locomotive fired 9400 lbs. of coal an hour for two consecutive hours.

As M. H. Haig has not yet arrived, anyone wishing to investigate the subject of flange lubrication is referred to R. D. Smith, superintendent of motive power of the Boston & Albany. He applied a lubricator to a passenger locomotive and discovered that thereafter it refused the services of a pusher provided to help the train up one of the bad grades in the Berkshires.

Friends of W. E. Dunham, supervisor of motive power and machinery of the Chicago & North Western at Winona, Minn., had some difficulty in recognizing him Tuesday until he invested in a new hat. A distinct gain in weight, coupled with the soft felt hat, changed his appearance entirely. Apparently, life in the Northwest is agreeing with him. He is quite enthusiastic over the application of superheaters to switch engines.

George Wildin, mechanical superintendent of the New Haven, is booming the baseball game for Saturday. After trying hard to locate Hammond, the captain of the Western team, he remarked: "It will be just as well for all of them if they stay away; for we are going to give them an awful licking." His friends are thinking of presenting him with a all-steel bat; but even this may meet the same fate as the hickory one last year.

F. H. Stark, superintendent of the Montour Railroad and the Pittsburgh & Moon Run, says that it is extremely hard to get common labor in the Pittsburgh district because of the activity of the mills and manufacturing industries and the extensive public improvements which are being made. A great many foreigners, believing that business conditions would remain quiet this year, returned to their native lands, and this has aggravated the condition.

J. J. Hennessey, master car builder of the Chicago, Milwaukee & St. Paul, gave convincing proof of his Irish descent in the convention hall yesterday. The following is taken from the stenographic minutes: "I notice that the mayor of the city said he was not a handsome man—I agree with him. (Laughter and applause.) But I overheard a little conversation last night on the Boardwalk that flattered me very much. Two gentlemen were walking along the Boardwalk, both practically as white-headed as I am, and certainly their judgment must be good. One said to the other: 'There is a certain lady here who is the most handsome woman that has ever attended the Master Car Builders' Convention.' The other man looked at his friend and said: 'Sir, if she is the one handsomest lady that ever attended the Master Car Builders' Convention, she is the handsomest lady in the world.'" (Applause and laughter.)

The Exhibit.

The Gold Car Heating & Lighting Company, New York, has brought out a thermostatic temperature regulator for heating railway cars. This regulator automatically controls the steam admitted to radiating pipes by the temperature of car.

Through the courtesy of the Jacobs-Shupert U. S. Firebox Company, New York, the Twentieth Century coupler is being exhibited in space 180-182. This coupler, which has just been developed and has not yet been placed on the market, is of the side operating type, consists of only three pieces and is said to be foolproof. It is in charge of W. A. Palmer, formerly with the Queen & Crescent.

Arthur Haller, of the American Locomotive Company, New York, arrived on the pier Tuesday morning very much out of breath, owing to his exertions in carrying a photograph of the boiler for the Virginian Mallet, the largest locomotive boiler ever built. It measures 112 in. in diam., and is equipped with a combination of the Gaines combustion chamber and Security brick arch. This photograph will be on exhibition during the convention.

GAS-ELECTRIC MOTOR CAR.

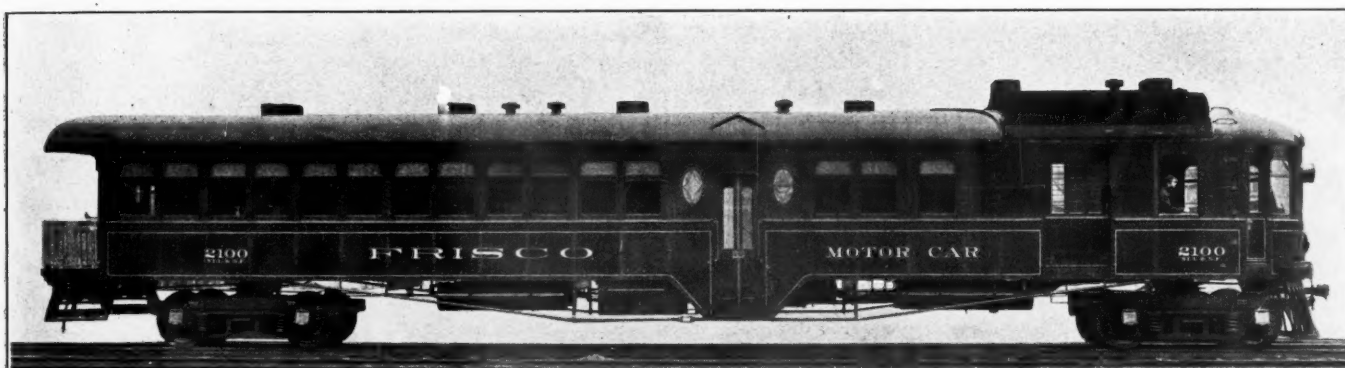
Gas-electric cars are now in successful operation on a number of railways in this country, being especially efficient on rapid transit interurban lines. Branch lines are sometimes operated at a loss by steam due to the small amount of travel, and this same traffic condition usually does not warrant the initial expense of complete electrification. In this province, the gas-electric car is proving its ability to reduce operating expenses. The gas-electric car is essentially a locomotive and car combined in one unit. In developing these cars, the General Electric Company, Shenectady, N. Y., has effected many improvements that contribute to simplicity, ease of control and resultant safety in operation. The motive power centers in the engine, generator and the motors. Several standard styles of car bodies have been established to meet the various requirements and a wide range of types can be furnished in response to demands for special arrangements of seating, smoking, mail and baggage compartments. But one motorman and one conductor are required to operate the car.

They are of all-steel construction, with the exception of the interior finish. The frame consists of steel I-beams and channels, strongly cross-braced, and steel plates form the outside sheathing. The underfloor of the car is of wood, sheathed with sheet iron on the lower side; while between this and the floor proper a heavy felt lining is inserted; the car sides are also interlined with felt. Cars having center entrances are built with the turtle back design of steel roof and rear; they may be provided with an observation platform and rear entrance, or both rear and center entrances. In general, the interior trim is of mahogany and the ceiling is sheathed with composite board. The windows are fitted with plate glass; the seats are made long enough to accommodate three persons; they are covered with friezette plush in the passenger compartment and with genuine Spanish leather in the smoking room, and the entire car is lighted with attractive electric incandescent fixtures.

The generating unit is located above the floor line of the cab, free from dust and dirt and under immediate observation of the engineer. It consists of an 8-cylinder, 4-cycle gas engine of the V type, direct connected to a 600-volt, commutating pole electric generator, designed to meet the special conditions the service demands. The engine is started by

compressed air taken from the main reservoirs of the air brake system which are built with surplus capacity for this purpose. The main air compressor is driven from the crank shaft of the main engine, and is fitted with an automatic governor which maintains a constant pressure. The engine can rotate at normal speed, irrespective of the speed of the car. An auxiliary equipment is also provided, consisting of a 2-cylinder 4-cycle gas engine direct connected to a single cylinder air compressor and lighting generator. The function of this set is to supply an initial charge of air for starting the main engine and to deliver power for lighting the car. This set is started by hand.

The control is simple, substantial and similar to that of any standard electric trolley car. Mounted on the axles of the forward truck are two GE-205, 600-volt, box frame, oil-lubricated commutating pole railway motors of 100 h. p. each. The voltage is governed by varying the strength of the generator field, which is accomplished by the movement of a single handle on the controller, and the resultant speed changes of the motors produce a smooth and rapid acceleration without rheostatic power losses or gear changes. Separate handles are provided for throttling the engine and for reversing the car.



Gas-Electric Motor Car for the 'Frisco.

The latter is accomplished instantly by changing the motor connections in the usual manner, without stopping the engine, which always rotates in the same direction. This allows the cars to be stopped quickly independent of the brakes in an emergency. All the levers are located within convenient reach of the operator. The radiators are placed on the roof and the circulation for cooling the engine is maintained by the thermosiphon system.

The trucks are of the swing bolster type with elliptic bolster springs and coil equalizer springs. The bearings, treads and flanges of the wheels and axles conform to the standards of the M. C. B. Association. The brake equipment includes hand brakes in addition to the combined straight and automatic air brakes. The headlight consists of a 50 candlepower Mazda incandescent lamp and reflector. A hot water heater, coal fired, is installed for heating the car. To prevent freezing in cold weather when the car is lying idle, the heater circulation may be connected to the engine cooling system. A 150 gallon gasoline tank for the power supply is suspended under the car. While the car is running the gasoline is pumped automatically by the engine, and by a hand pump when idle. The car illustrated is in service on the Frisco system, over whose lines a total of seventeen of these seventy-foot gas-electric cars will soon be in operation. Among other roads using these cars are the Southern Railway; Minneapolis, St. Paul, Rochester & Dubuque; Bangor & Aroostock; Buffalo, Rochester & Pittsburgh; Canadian Northern; New York, Westchester & Boston; Delaware & Hudson; Missouri Pacific; Pittsburgh & Lake Erie; Missouri & Northern; Arkansas, and the Chicago, Rock Island & Pacific.

NEW IGNITER FOR MOTOR CARS.

A novel ignition system, which requires no batteries or magneto, has recently been adopted by Fairbanks, Morse & Company for use on section motor cars. The igniter for each cylinder is made up of two permanent magnets each passing through a wire coil. These are located parallel to each other and a bar armature, held in place across the ends by a strong spring, makes them a horseshoe magnet. At the opposite end is another cross bar which makes but instantaneous contact. By means of an eccentric on the crank shaft, which operates a trip latch on the igniter, the first armature is displaced from its seat on the magnet at the same instant that the second makes its contact. This reverses the flow of current through the magnet until the first armature is reseated by the spring. As it strikes its permanent seat a spark is produced between the points of the spark plug.

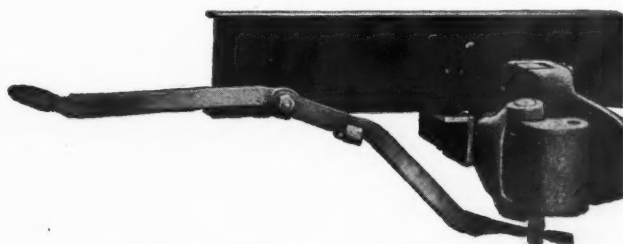
The igniter is enclosed in a dust and water proof case, and requires only as many wires as there are cylinders on the engines, a secondary wire running from each spark plug to its igniter. The simplicity of this ignition is apparent.

The spark coil, batteries and commutator are all eliminated, together with all complications in wiring.

An exhibit of this ignition system can be inspected at the Fairbanks-Morse space, No. 584, where a complete section-alized motor car is exhibited. This shows the engine in operation and how the spark is obtained in the engine cylinders with the new igniter.

PENN FREIGHT COUPLER.

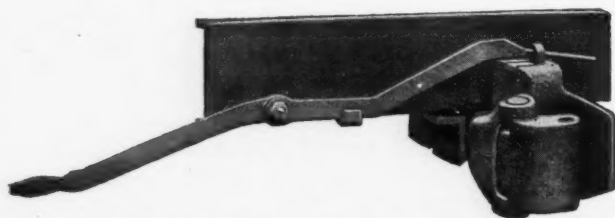
The Penn freight coupler exhibited by The McConway & Torley Co., spaces 501, 503, 505, is adapted for both overhead and underneath release. No change in the detail parts



Penn Freight Coupler with Underneath Release.

of the coupler is required to make the change from the overhead release to the underneath release; the lifter of the locking block is simply reversed from the upper side of the coupler and inserted from the lower side. When used as an

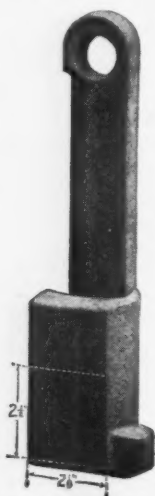
overhead release the lifter pulls the lock up by the operation of the overhead lever, and when applied underneath, it pushes the lock up by the operation of the underneath release lever. In addition to this feature, the coupler has 5



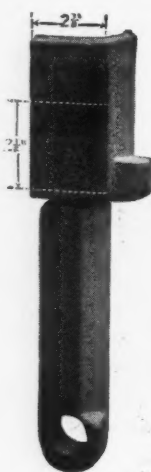
Penn Freight Coupler with Overhead Release.

sq. in. of bearing surface between the lock and the knuckle, which is more than one square inch in excess of the M. C. B. recommended practice.

The coupler also has a lock-set, and an efficient knuckle



For Overhead Release.



For Underneath Release.

opener, which pushes the knuckle open to its fullest range of movement from either a fully closed position or from any partially closed position.

BARBER 50-TON STEEL FLAT CAR.

The Standard Car Truck Company, Chicago, has a new type of flat car in the track exhibit, which was designed and thoroughly tested out in service by the mechanical department on one of the large trunk lines. The car is designed for 100,000

lbs. capacity and carries the load on two main steel girder sills of a special form. These are spaced apart with center lines directly over the center lines of the truck side frames, which are above the center lines of the journals.

The radial and lateral travel of the truck is provided for in the well-known Barber anti-friction truck devices, which are applied between the underside of the main body girders and the top of the truck springs, and all of which rest and are supported centrally in the steel truck side frames. All details are carefully designed to meet railway requirements in case of repairs or renewal of parts.

The load instead of being carried on two center plates, now the common practice, is carried on four steel bearings applied to the outer ends of the truck bolsters. The present center plates are entirely eliminated in the construction, the load being transferred directly in and over the truck frames which provide solid construction with free radial and lateral travel of



Barber Side Bearing Truck.

the bolster, sufficient to lessen the blows and wear between the wheel flange and the rail. This construction removes the load from the center of the truck and body bolster to the truck side frames direct and increases the freedom for curving the truck fully 40 per cent., as compared with the present common standard center plates.

The truck side frames are of I-beam drop girder shape, preferably of cast steel. The truck springs are spaced in pairs, each side supported on a seat cast solid with the truck frames. The truck bolsters are rolled or cast steel I-beam shaped with the web of the beam placed horizontal. The center pivot in place of the center plate provides for and takes care of the buffing shocks. There is no vertical load on this center pivot. The roller caps are of malleable iron and are secured to the under side of the bolster. The radial roller seats of cast steel are secured on the upper side of the bolster.



Barber 50-Ton Steel Flat Car with Side Bearing Truck.

The radial roller cap is also of steel. The three parts of the radial device are so arranged that they are interlocked into one member with freedom to move with the curving of the truck or car body.

The company has had several cars and trucks of a similar design in the roughest kind of service for from two to four years, some of which have made 50,000 miles and are still running with the original wheels, journal bearings and other parts, and without expense for repairs. The car and truck are designed to provide minimum weight and cost of maintenance and to reduce wheel flange wear and train resistance.

WALKER & BENNETT SIMPLIFIED CAR SEATS.

The Walker & Bennett Simplified car seats, made and shown by the United States Metal Products Company, New York, embrace many new ideas in car seat construction, including pressed steel pedestals, arm rests of several new designs, end plates, etc. The pedestals and the arm-rests, are so constructed that they are apparently in one piece, joined in such manner that the seams cannot be seen, and presenting a smooth surface. The construction of these pieces is such that minimum weight is obtained with maximum strength. The new fastening of the seat to the pedestal is strong and simple, and made possible by the use of the original Walker & Bennett round tubular connecting rods. The arm-rests and aisle end-plates are made intact and consequently the arm-rests are secure. The finish of the arm-rests is in imitation of mahogany.

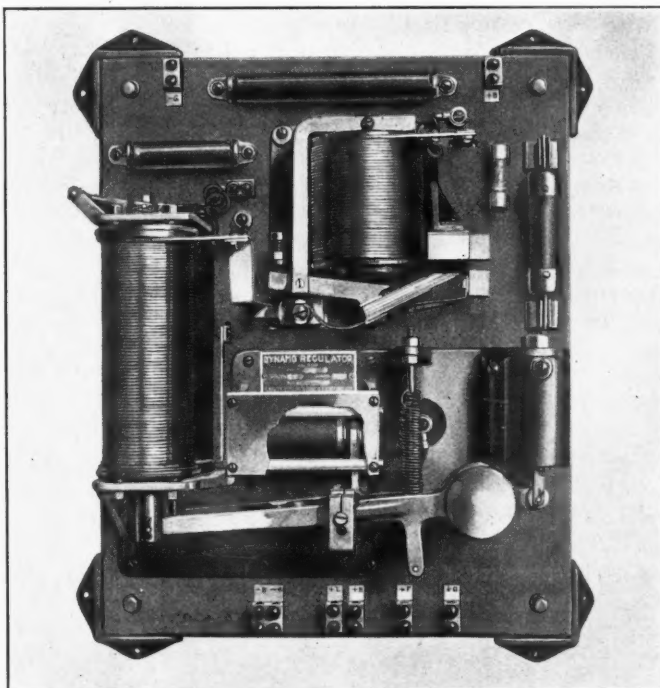
SAFETY TYPE F REGULATOR.

The method of controlling an axle lighting dynamo by means of a carbon resistance in series with the field circuit was first introduced by the Safety Car Heating & Lighting Company, New York, and has been demonstrated to be the only method of control which will fulfill the exacting conditions of car lighting service. The Safety type D regulator has proved its efficiency in actual service and has successfully met all the requirements. In the endeavor to perfect the type D regulator the type F regulator has been developed. The operation is essentially the same as the type D; that is, the generator is completely protected against overload, batteries can never be overcharged, and at the same time, when the batteries are empty, they can be charged in the minimum length of time. This result is accomplished with two pieces of apparatus on the regulator instead of three as on the type D.

The control of lamp voltage has been the most difficult feature in connection with axle light equipments and experience has shown that a carbon pile resistance in series with the lamps is the only satisfactory method for accomplishing accurate regulation. In order to emphasize the importance of accurate lamp regulation, it should be noted that if the voltage delivered to an electric lamp drops 3 per cent. below normal, the available candle power of the lamp drops 10 per cent.; if the voltage drops 5 per cent., the candle power drops 18 per cent. If the voltage on the lamps is 3 per cent. above normal, the life of the lamp is reduced 33 per cent., and if the voltage is 5 per cent. above normal, the life is reduced 50 per cent. It has been the aim in the design of lamp regulators to accomplish the closest possible lamp regulation with the fewest number of parts. The type D lamp regulator has demonstrated in service that it is possible to satisfactorily regulate the lamp voltage by using a carbon pile resistance in series with the lamps, an electro magnet regulating the pressure upon this carbon pile and a control apparatus controlling the strength of the electro magnet and causing it to respond to variations in lamp voltage. The type F lamp regulator is a perfected type D, the same regulation being accomplished without a means of control exterior to the lamp regulator proper. The actuating magnet is connected

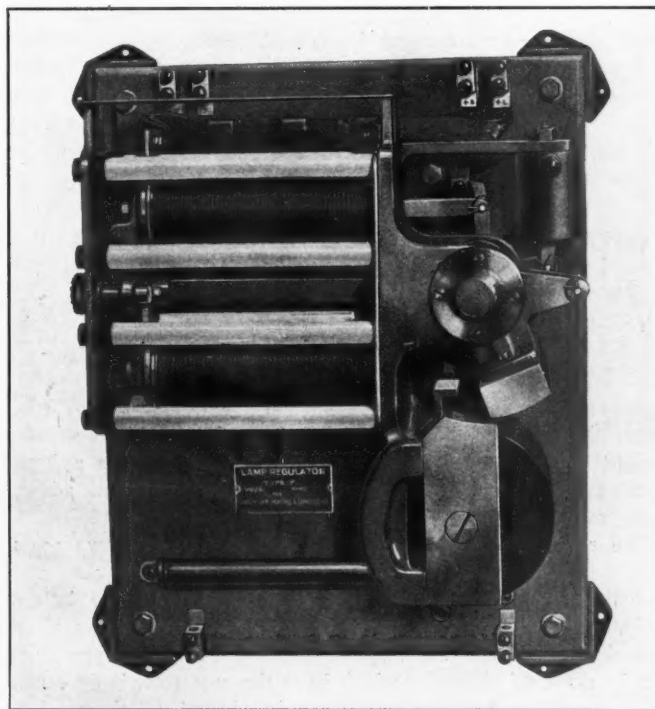
directly across the lamps; the regulator is so carefully designed and built that it will respond to the smallest variations in lamp voltage.

Type F Dynamo Regulator.—The dynamo regulator consists



Safety Company Type F Dynamo Regulator.

of two pieces of apparatus, the field regulator and the main switch. The main switch is of the closed magnetic circuit form with a hinged armature carrying a heavy laminated copper contact, the whole being of the design that is universally used in circuit breakers and other switch apparatus. The field



Safety Company Type F Lamp Regulator.

regulator consists of two coils, a series coil carrying the total generator output, and a voltage coil, connected directly across the generator, and subject at all times to generator voltage. The plungers of these two coils, acting through independent

levers, vary the pressure on the field resistance carbons, giving the proper field current strength to regulate the generator output for all conditions of speed and battery charge. The voltage coil prevents the voltage impressed on the battery rising above 40 volts and the series coil prevents the total current given out by the generator rising above its desired output.

Experience has demonstrated that if a lead battery has impressed across its terminals the voltage of 2.5 per cell, it will automatically take a charge best suited to its needs; that is, the charge will start at a high rate and will automatically taper to nearly zero as the battery becomes full, corresponding to a stop charge. If the battery is entirely empty and, more particularly, if there is a considerable lighting load, the current demand upon the generator will be in excess of its safe capacity; therefore, it is necessary to prevent the generator being overloaded under any conditions. With the type F regulator the generator gives its full rated capacity at all times, if it can be used, charges the battery in the shortest possible time, and protects the battery from overcharge.

Type F Lamp Regulator.—The type F lamp regulator consists of two carbon pile resistances connected in series with the lamps. The carbons are compressed by a coil spring, which is connected by a link, acting through a toggle mechanism to the armature of the actuating magnet. The pull of the spring is opposed by the pull of the electro magnet. The coil of this magnet is connected directly across the lamp mains. The pull of the spring is adjusted so that it will balance the pull of the magnet throughout its stroke when the lamp voltage is of the desired value. Mechanical friction and hysteresis are eliminated by careful design and the use of the proper materials.

If the lamp voltage is increased, the pull of the electro magnet is increased and the pressure upon the carbons is reduced; their resistance is thereby increased until the lamp voltage is again normal. If the lamp voltage is reduced, the opposite action takes place, the magnet being weakened and the carbons more tightly compressed, reducing their resistance and bringing the lamp voltage back to normal.

The type F lamp regulator is a simple piece of apparatus and, consisting as it does of only a carbon pile in series with the lamps and a magnet connected across the lamp, there is nothing to get out of order. The operation is simple and most reliable, because the voltage regulation depends only upon the balance between a magnet pull and a spring pull, without the use of any control apparatus such as carbon pile controls, buzzers or vibrators.

COMBINATION STEEL UNDERFRAME AND TRUCK BOLSTER FOR FREIGHT CAR.

The Mid-Western Car Supply Company, Chicago, has in the track exhibit a sample car illustrating a novel design for steel freight cars. The combination body and truck bolster presents an important improvement in the design of the steel underframe. This design as applied to the steel underframe freight equipment results in a saving in weight. The reduced first cost and that of maintenance are also important advantages over present designs.

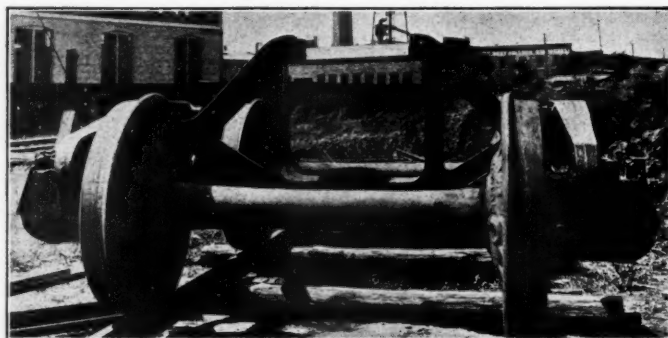
The combination body and truck bolster has only two parts, the body proper and the pivot cap. These are of cast steel and the truck center plate is cast integral with the bolster body. The illustration shows this bolster with the cap removed. The center sill may be the single I-beam type or it can be made of channels, which have the cast steel body center plate extending between and securely riveted to them. The center plate sill spreaders have pivot pin extensions about 5 in. outside diameter, centrally located at top and bottom and engaging the pivot cap on top, and a cored hole in the center of the bolster bearing at the bottom. The centers of the pivot pins are connected by a cored passage and the hole is filled with oil and waste to provide lubrication for the center bearing.

The underframe of the car to which the combination bolsters are applied has four cross ties, which, in addition to end sills and cross bearers, transmit the load to the center bearing. Normally the load of the car will rest centrally on the center bearings, but when the car is rounding on curves at speed, the centrifugal force will throw the center of gravity to one side and the pivot pins will then take the side force and perform the same office as the side bearings on ordinary equipment.

On a curve the car proper is guided laterally by the pivot pins and swings on center bearings, independent of the truck and bolster. In removing the truck from the car body it is only necessary to unscrew the bolts that secure the pivot cap to the bolster, jack up the car, and proceed in the usual manner.

The advantages claimed for the combination bolsters are: Increased strength. The design of the underframe is such that all the members can be made proportional to the known forces to which the car is subjected in service. The elimination of a large number of details simplifies the design and thereby makes it possible to accurately trace the forces and determine the exact amount of metal needed for a given load.

A steel underframe having the combination bolster will weigh considerably less than the average ordinary steel underframe, the strength in each case being the same. Not only is the weight of two bolsters eliminated, but a large number of pieces



Combination Steel Underframe and Bolster with Center Pivot Cap Removed.

and members necessary in the ordinary underframe are done away with.

The first cost of the underframe having the combination bolster will be much lower than the ordinary underframe, and maintenance cost will be reduced to a minimum.

Side bearing friction will be eliminated. This is a large factor as it is estimated from dynamometer tests that a total of about 2 per cent. of the pulling force from the locomotive is lost in side bearing friction. There is also a loss of power, due to the effort to overcome the added resistance caused by flange friction.

The inside height of box cars is increased. The floor line of the car can be located some 12 in. lower on cars having the combination bolster and the standard drawbar height may be retained. This increases the cubic capacity and, therefore, the loading capacity of many kinds of merchandise cars which are now restricted as to inside height by tunnel clearance and height of trucks.

The point of application of the load of cars having combination bolsters is only 19 in. above the top of the rail, which is much lower than in ordinary cars. The possibility of derailment is reduced, and this is an important factor in high capacity cars, especially in fast freight service.

The car is equipped with the Anderson friction draft gear, type A, having the double yoke attachment, which carries the gear, eliminating the draft bolts, nuts and straps. The Mid-Western Car Supply Company's buffing device located within the buffer or striking plate casting is used, and works in unison with the draft gear.